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ABSTRACT

The primary goal of the present study is an exposition of the structure of Mam, a Mayan language of the Mamean group. Mam is the most widely spoken of the four Mamean languages, and has been roughly estimated to have a quarter million speakers located in the departments of Huehuetenango and San Marcos in Guatemala and in the state of Chiapas in Mexico. The study is based on stories and reports recorded in 1967-8 in Huehuetenango. The analysis is performed on the basis of the glossematic theory as put forth by Hjelmslev. This theory builds upon seven principles: the empirical principle and the principles of simplicity, economy, reduction, generalization, exhaustive description, and reduction. Following a presentation of glossematic views on the structure of language and an explanation of the notational system, the Mam verb system and sentence structure are discussed. Subsequent sections on lexematics, syllabematics, and taxematics deal with vocabulary, syllable structure and syntagmatic organization of Mam. (CLK)

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ANALYSIS IN OUTLINE OF MAM, A MAYAN LANGUAGE

Una Rasmussen Canger

Dissertation submitted in partial satisfaction
of the requirements for the degree of
Doctor of Philosophy in Linguistics in the
Graduate Division of the University of California, Berkeley

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Analysis in Outline of Mam,
a Mayan Language

By

Una Rasmussen Canger

Grad. (University of Copenhagen) 1959

DISSERTATION

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PREFACE

Mam has been classified among the Mayan languages in a group called the Mamean group (McQuown 1956). This group also includes the languages Ixil, Aguacatec, and the recently discovered Teco (Kaufman 1969).

Mam is the most widely spoken of the four Mamean languages. It has been roughly estimated to have a quarter million speakers who are located in the departments of Huehuetenango and San Marcos in Guatemala and in the state of Chiapas in Mexico.

Mam is spoken in a number of quite divergent dialects. However, the present study takes into consideration only the dialect spoken by the residents of the village Todos Santos Cuchumatanes in Huehuetenango. There are some ten thousand residents of Todos Santos.

Other Mam dialects have been studied by Edward Sywulka and Dorothy Peck (Sywulka 1948 and 1966 and Peck 1951).

The material on which the analysis is based was collected in Todos Santos during two periods: from October 1966 to August 1967 and during July and August of 1968. It consists of a large body of texts recorded on tape and transcribed. The texts are stories and reports of various kinds told by over twenty different people (ranging in age from sixteen to eighty-three) whose contribution to the present study should be obvious. Most of the eliciting was done in

connection with the first analysis of the texts, and in this work I was skillfully assisted by my three main informants, Fortunato Pablo Mendoza, Justo García Mendoza, and Pedro Jiménez Ramos, to whom I hereby recognize my great indebtedness.

The first field trip was made possible through grants from the Center for Latin American Studies, Survey of California and other Indian Languages, Phillips Fund of the American Philosophical Society, and the American Women's Club in Denmark. The second field trip was also supported by the Center for Latin American Studies as well as by the Graduate Division of the University of California.

The dissertation has been supervised by Francis J. Whitfield, Terrence Kaufman, and Wallace Chafe to whom I acknowledge my gratefulness.

Terrence Kaufman has supported me in my work by always being willing to discuss the problems of Mam and by sharing his broad knowledge and experience in the field of Mayan languages.

The analysis of Mam is performed on the basis of the glossematic theory as it is presented by Louis Hjelmslev in the forthcoming Résumé of the theory. In this connection it is a pleasure for me to acknowledge the constant support I have received from the chairman of my dissertation committee, Francis J. Whitfield, who has helped me not only directly with guidance and discussions but also indirectly through his superior translation and editing of Louis Hjelmslev's Résumé of a Theory of Language.

The primary goal of the present study is an exposition of the structure of Mam, and it is hoped that the close adherence to the glossematic theory will not interfere with this intention. The analysis is preceded by an introduction presenting certain glossematic views on the structure of language and on certain concepts and principles contained in the theory. The introduction also outlines the procedure of description.

The rest of the study is organized in agreement with the glossematic procedure as presented in Hjelmslev's Résumé. Résumé was composed in the early forties, but it was not published then. In Résumé the theory and the procedures of analysis are given in the form of definitions (Df), rules (Rg), and notes (N). Quotations here included from Résumé are all from a pre-publication version of the mentioned translation by Francis J. Whitfield.

A note explaining the various notation systems is found on p. 57f., and the Appendix (p. 289) is a brief phonetic key to the transcription. An informal outline of the Mam verb system and sentence structure appears pp. 64-79.

INTRODUCTION

Content - Expression A language is a structure with two planes, a plane of content and a plane of expression:

plane of expression

plane of content

The traditional units in a language like sentence, clause, and affix are each made up of two elements, an element of content and an element of expression. A sentence is composed of a sentence content and a sentence expression, a clause is composed of a clause content and a clause expression, and an affix is composed of an affix content and an affix expression. All such pairs of an element of content and one of expression are called signs.

The English sentence "when he saw me, he left the garden" is made up of a sentence expression /hwen hiy so miy \ hiy left ðə garden and a sentence content 'when he saw me he left the garden'. (/ and \ indicate rising and falling intonation respectively.) The sentence expression might possibly be analyzed at different stages of analysis into a presupposed and a presupposing clause expression, into intonations (a rising and a falling one), into syllable groups, into syllables, into parts of syllables, and into phonemes.

The sentence content might possibly be analyzed into a presupposed and a presupposing content clause, into conjunctions versus non-conjunctions, into morphemes (here elements of content like 'past tense', 'first person', etc.) and stems.

In the sentence expression, the clause characterized by rising intonation presupposes the clause characterized by falling intonation. /hwen hiy so miy is said to determine \hiy left ðə garden; in other words, \hiy left ðə garden can occur alone, not preceded by some clause with rising intonation; but /hwen hiy so miy cannot occur without the accompaniment of some clause characterized by falling intonation. An arrow pointing towards the presupposed or determined function is used as the symbol for the function called determination, thus

/hwen hiy so miy $\Rightarrow$ \hiy left ðə garden

The same function, namely determination, is found between the two clause contents,

'when he saw me' $\Rightarrow$ 'he left the garden'

and here the conjunction 'when' is responsible for the determination.

Thus both the clause expression and the clause content connected in the sign "when he saw me" are determining; and both the clause expression and the clause content of the sign "he left the garden" are determined. The analysis of the content does not always match that of the expression as

perfectly as in this particular example. That is the reason why the two planes are analyzed separately. When the two signs are transposed, "he left the garden when he saw me", the analysis of the expression is no longer parallel with that of the content:

/hiy left ðə garden	→→→→→	hwen hiy so miy
'he left the garden'	←←←←←	'when he saw me'

Signs - Figurae To one sign expression there always corresponds one and the same sign content, and to one sign content there always corresponds one and the same sign expression. (I here ignore the problem of synonyms and homonyms.) The sign expression am is always connected with the sign content 'be - indicative - present - first person - singular'.

Words and affixes that cannot be further divided into smaller signs are said to be minimal signs. Sign expressions and sign contents of minimal signs are not the ultimate components of language; they can be analyzed into smaller elements of expression and elements of content. The sign expression am can be found to be composed of two elements of expression, a and m; and the sign content of "am" can be found to be composed of five elements of content, 'be', 'indicative', 'present', 'first person', and 'singular'. However, no particular connection can be established between each of the two elements of expression and each or some of the five elements of content; a is not the expression element connected, for example, with 'be' or with any one of

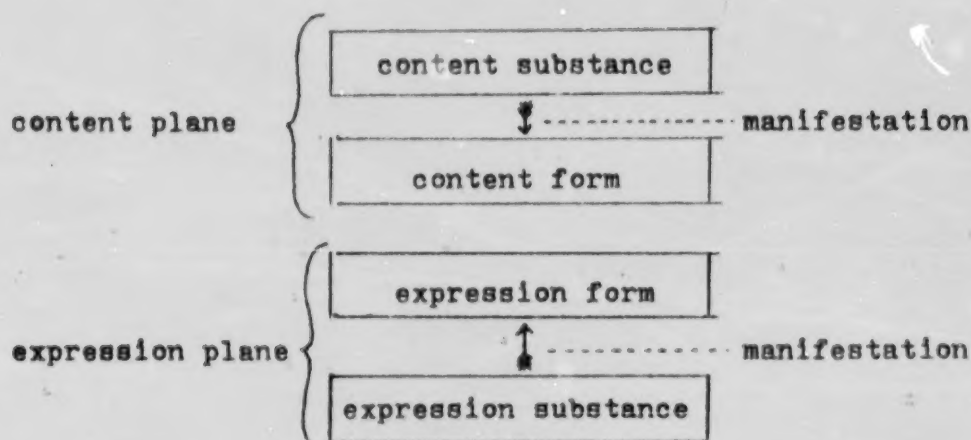
the other elements of content. The connection takes place between the combination of the elements of expression on the one hand and the combination of the elements of content on the other. These elements that are not in themselves sign contents or sign expressions, but components of sign contents and of sign expressions, are called figurae in both planes.

Form - Substance The content figurae and the expression figurae are elements of form, of content form and expression form. Thus, figurae of the expression plane, for example, are not actual sounds or letters, and they are described and defined only by their mutual interrelationships.

Elements of form can be manifested by various substances, but at the same time they--and the form in general--are independent of substance. The expression elements in the sign expression of "am" are manifested phonetically when I say am or graphically when I write am; in both cases the form, i.e. the number of expression elements and their relationships, remains unchanged. Substance, however, depends upon form, it must manifest linguistic form in order to be linguistic substance at all. Sounds that are produced by vibrations of the vocal chords are not part of substance unless they manifest some elements of expression form.

The two planes each consists of two parts, and in both planes, substance determines form. This determination is called manifestation. The content substance, the content

form, the expression form, and the expression substance are the four strata of language:



One can imagine two languages with fairly similar systems of expression form in which two elements of expression are found to be defined in exactly the same way within each of the two systems. They can for example be symbolized s and l. It is very likely, however, that they are not manifested in exactly the same way, in other words they are "pronounced differently" in the two languages, or they differ as to substance.

The same situation is encountered in the plane of content:

DANISH	MAM	ENGLISH
træ	ʔeeʔ	tree
brande	sliʔ	wood
skov	ɔ̃kʔul	forest

The chart shows approximately the same area of content in the three languages, Danish, Mam, and English. (The situation is here slightly simplified for all three languages). They all have three elements of form, distributed in the same manner in Danish and Mam, but differently in English. træ and gee? mean 'tree' and 'wood' as a material; brænde and sii? refer only to wood used for burning; and skov and čk?ul are 'wooded areas'. The difference between English wood 'wooded area' and forest is not found in Danish or Mam.

The three elements are, however, manifested differently in Danish and Mam. In the example with s and š, the expression elements were "pronounced differently" in the two languages, they differed as to manifestation. The quoted Danish and Mam content elements are manifested by substances that differ in cultural scope and significance.

sii? is an absolutely necessary item in the daily life of the Indians who speak Mam; the men go up in the mountains to cut it, they carry it home on their backs, it is used for the open fire on the floor on and around which their food is cooked, and it is also used in the preparation of the weekly steambath.

In my dialect of Danish, brænde is associated with open fire places and tile wood stoves that are not necessary parts of the general heating system, but rather used to make a room cozier during long and cold winter evenings.

In the case of skov and čk?ul the difference in manifestation is partly due to the fact that in Denmark the

most common tree is the beech tree, and that all woods grow almost at sea level; whereas in Mam country coniferous trees form most woods which in addition grow up and down high mountains.

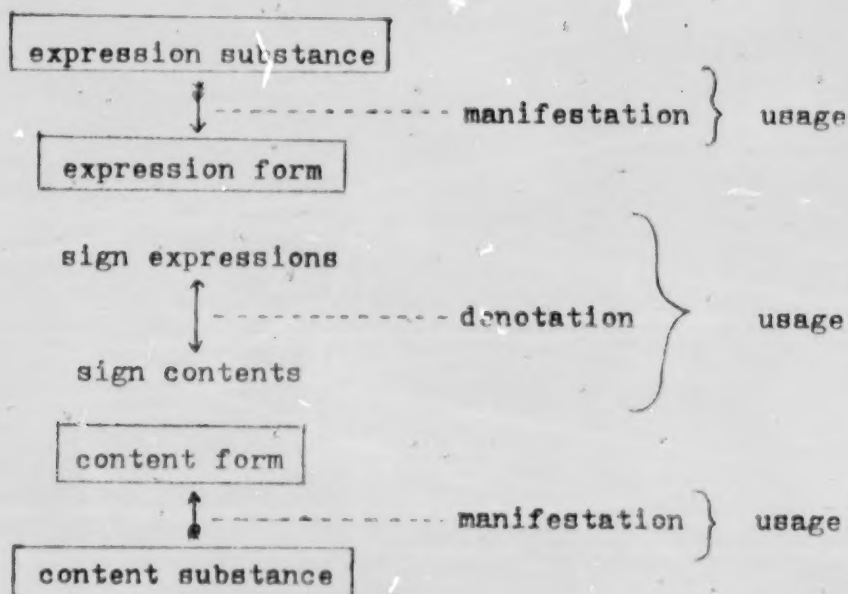
It is quite common that two dialects that have the same number of phonemes and the same expression system differ as to the manifestation of the phonemes. In the same way, the substance manifesting the same content form of two dialects may differ considerably. I imagine that the words sea, river, brook, and ocean exist and occupy the same positions in the content form of the English dialect spoken in Kansas and in the one spoken in Massachusetts, but there can be no doubt that the manifestations of ocean are not the same in the two dialects. The concept of ocean must be different to people who have never seen an ocean and to people who live by the ocean and are constantly aware of its existence.

The symbols and names given elements of form are chosen to simplify the correspondence with substance. The fact that some element of expression form is called s implies nothing about its characteristics as an element of form, the symbol only indicates that the element can be expected to be manifested by some s-sound.

Denotation The relationship found between the two planes is one of mutual presupposition; no plane of expression occurs without a plane of content and vice versa. However, this mutual presupposition is not contracted by individual

planes of expression or individual sign expressions on the one hand and by individual planes of content or sign contents on the other, but by the category of content units and by the category of expression units. If there is some plane of content, there must also be some plane of expression. But there is nothing to prevent a connection between the expression plane found for Mam and the content plane found for Danish. This mutual presupposition between content and expression is called the sign function or denotation. It occurs wherever a sign content and a sign expression are connected. The technical term for mutual presupposition is interdependence, and it is symbolized by $\longleftrightarrow$.

Schema - Usage Schema is defined as the entirety of functions found within the content form and the expression form as opposed to the functions constituting usage and occurring between the strata:



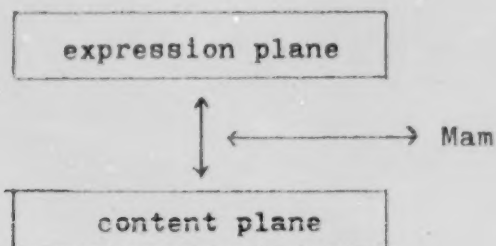
Only the functions within the two forms belong to schema; and both denotation and manifestation are part of usage. It is arbitrary and a matter of usage whether in English a sign expression like blick is actually found or not, and whether in Danish sign contents like 'paternal uncle' and 'maternal uncle' occur or not (in Danish there are sign contents for 'maternal grandfather', 'paternal grandfather', 'maternal grandmother', 'paternal grandmother', 'maternal aunt', and 'paternal aunt'). It is a fact of usage that the sign expression am forms a sign with the sign content 'be - indicative - present - first person - singular' rather than with any other sign content.

It was therefore misleading for me to start by discussing signs and sign expressions and sign contents since they do not belong to schema, but I did so in order to emphasize the importance of content and expression at all stages.

Connotation The following two sentences "at xun n̄ceex" and "ich habe ein Pferd" can both be translated 'I have a horse'. The two sentences "min ti? tu?mæl wu?yən" and "er liest ein Buch" are translated 'I do not know' and 'he reads a book' respectively.

From some point of view the first two sentences can be said to be variants, whereas this can never be said of the last two. The difference between the first two sentences could be expressed by saying that one is Mam and one is German. In glossematics, Mam, for example, is called a

connotator, and it is said to be interdependent with the connection between the content plane and the expression plane that I have set out to describe:



The category of denotations, or of such connections between content and expression, is interdependent with a number of categories of connotators. Any connection between a content and an expression must be defined in respect of all of these categories of connotators.

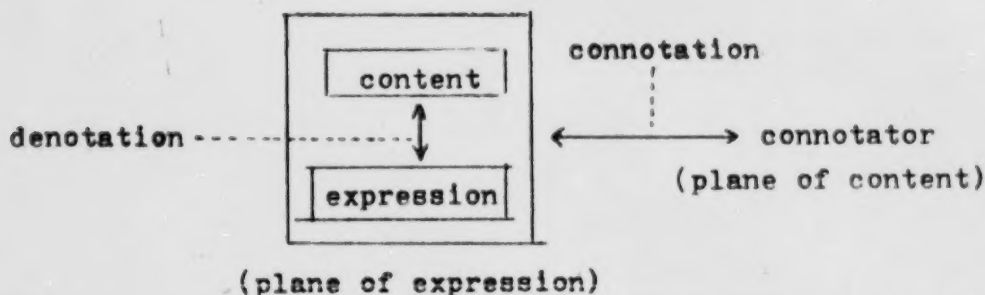
Only by removing the connotators, Mam and German, was I able to recognize that the first two sentences are variants and that the second pair cannot be reduced to variants

The two words "swipe" and "steal" are found to be variants when the connotators lower value-style and neutral value-style are removed.

No two people speak exactly alike, but the languages of individuals, idiolects, can be reduced to variants when it is recognized that they are interdependent with one type of connotators, namely physiognomies, and when the physiognomies are removed.

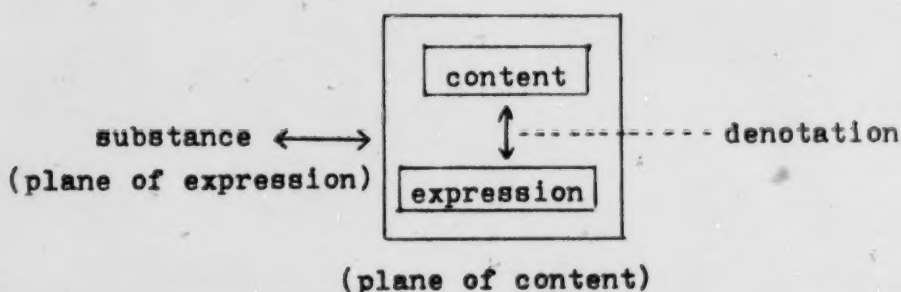
The function contracted by a connotator and a denotation is called connotation. It is also a sign function; the plane of content and the plane of expression that I

want to describe in this paper are expression for the connotator, the national language, Mam, and Mam is the content for the connection between those two planes:



Connotation and denotation are alike in that they both have as their functions two planes (a plane of content and a plane of expression), or in other words they are both semiotics. A connotative semiotic differs from a denotative semiotic in that its plane of expression is in itself a semiotic, whereas no plane contracting denotation can be a semiotic.

Metasemiotics The study of the substance, expression substance and content substance, is also semiotics in which the denotative semiotic again constitutes one plane, and what is substance from a denotative point of view here constitutes the other plane:



Substance and form are thus relative terms; what is substance in denotative semiotics becomes form in this new kind of semiotic called metasemiotics. Here sounds and meanings are analyzed in relationship with the units and variants found in denotative schemata.

The denotative semiotic is then in the center of a complex of semiotic structures. In a denotative semiotic the connection between content and expression, the sign function, is arbitrary. It is decided by usage that the sign expression sem contracts a function with the sign content 'be - present - indicative - first person - singular' rather than with any other sign content. This arbitrariness of the sign function is found not only in denotative semiotics, but in all semiotics.

The elements in the complex of semiotic structures are defined not by relationships between the strata, but by relationships within their own stratum. I have mentioned that figurae of the expression are defined and described only in terms of functions found within the expression form, likewise the figurae of content form.

I do not characterize a language or a schema by saying that it is Mam or French, rather I thereby simply state that there is an arbitrary connection between a certain schema and a certain connotator. If I want to talk about a particular schema or rather about its two strata, content form and expression form, I must do so in terms of other content forms and other expression forms. A given content form has its place in the paradigm of content forms, and a given ex-

pression form has its place in the paradigm of expression forms. In the same way, connotators are defined in relationship with other connotators; the connotator French is defined in relationship with, for example, Spanish and Latin.

Paradigmatics - Syntagmatics When one analyzes a language,, two points of view present themselves, one according to which various elements are seen to co-occur in the text. In "am" a and m co-occur, and 'be', 'indicative', 'present', 'first person', and 'singular' co-occur. According to the other point of view various elements are seen to alternate; k and t alternate, in the words "back" and "bat" there is either k (bak) or t (bat), k and t are considered elements in a paradigm from this paradigmatic point of view; but from the other, the syntagmatic point of view k and t co-occur, for example in the word "fact" (fakt). In the content, 'first person' and 'third person' alternate in the words "am" and "is".

In syntagmatics it is the text or process and in paradigmatics the system that is analyzed.

The analysis of syntagmatics and paradigmatics consists in finding and registering all the functions that constitute the two structures.

There are three functions based on presupposition. I have so far introduced only two of them, determination and interdependence. These functions can be defined by their

functives; "a Functive whose presence is a necessary condition for the presence of the functive to which it has Function" (Réf Df 14) is called a constant; and a "Functive whose presence is not a necessary condition for the presence of the functive to which it has Function" (Réf Df 15) is called a variable. In the very beginning I gave an example in which rising intonation determines or presupposes falling intonation:



The presence of $\backslash$ is a necessary condition for the presence of $/$, in other words $\backslash$ is a constant; but the presence of $/$ is not a necessary condition for the presence of $\backslash$, so $/$ is a variable.



variable constant

Determination is defined as a function contracted by a constant and a variable, (v $\longrightarrow$ c).

Interdependence is a function between two constants, constant $\longleftrightarrow$ constant.

A third function, constellation, is defined by being contracted by two variables, variable | variable.

The terms determination, interdependence, and constellation can be used indifferently for syntagmatic and paradigmatic functions. Syntagmatic functions are also called relations, symbolized R; and paradigmatic functions are also called correlations, symbolized i; and there are speci-

fic terms for the three relations and the three correlations:

	function	relation	correlation
cohesion	determination $v \Rightarrow c$	selection $v \rightarrow c$	specification $v \text{ --- } c$
reciprocity	interdependence $c \longleftrightarrow c$	solidarity $c \infty c$	complimentarity $c \perp c$
	constellation $v \mid v$	combination $v \text{ --- } v$	autonomy $v \vdash v$

Determination and interdependence can both be characterized by having constants among their functives, and they are given the common name cohesion; interdependence and constellation are alike in that they both individually have only one kind of functives, and the two functions are therefore called reciprocities.

In English b and r can co-occur initially in the syllable, "bran", but each one of them can also occur alone, "ban" and "ran"; thus the presence of b does not presuppose the presence of r, and the presence of r does not presuppose that of b. b and r contract constellation, or more specifically combination:

b ——— r
variable variable

The content unit 'than' is not found unless the content unit 'comparative' has appeared in the preceding clause: 'Peter is taller than his brother', whereas 'comparative'

occurs freely without necessarily being followed by 'than',
'his older brother is sick'. 'than' determines or selects
'comparative':

'than'	→	'comparative'
variable		constant'

Another example of selection is found between consonants and vowels. In English, syllables made up of just one vowel are possible, whereas no one consonant can form a syllable; thus consonants select vowels:

category of consonants	→	category of vowels
variable		constant

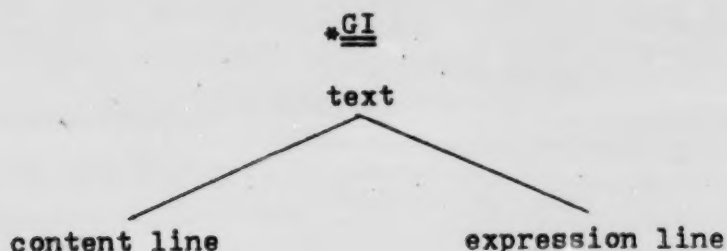
However, the function between vowels and consonants can also be considered from the paradigmatic point of view, i.e. as a correlation, and then it is an interdependence. If in a system there are no consonants, then there are no vowels either; analogously it makes no sense to talk about 'singular' in a language that has no 'plural'.

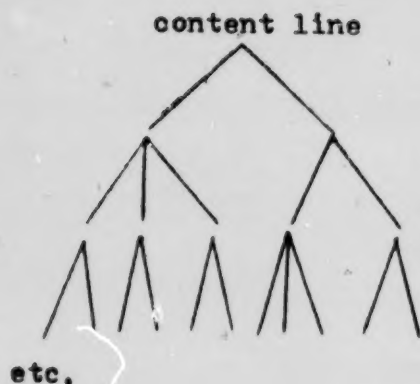
category of consonants	+	category of vowels
constant		constant

Description I have said that a language is a structure. A structure is a "network of functions", and the description or analysis of such a structure consists in registering the functions. This registration of functions is not done in an

arbitrary way; it is done according to a procedure and certain rules that serve to assure that the analysis be exhaustive and the simplest possible. Within the frames of the given procedure the analysis must be carried out in the greatest possible number of divisions and must ultimately result in the smallest possible number of derivatives or elements. In other words, each division should divide into the largest possible or the fewest possible parts. A division into two parts must result in derivatives larger (and fewer) than those of any other division. But it is not always possible or appropriate to divide into two parts.

The very first analysis to which the text is submitted divides it into two parts, namely the content line and the expression line. A line is a syntagmatic plane. Thereafter the two lines are analyzed separately but simultaneously. This subsequent analysis is carried out in two series of operations (*GII and *GIII) with different bases of analysis. In both series the analysis starts with the undivided content line and the undivided expression line; and in both series each operation has two sections, one treating content and the other treating expression.

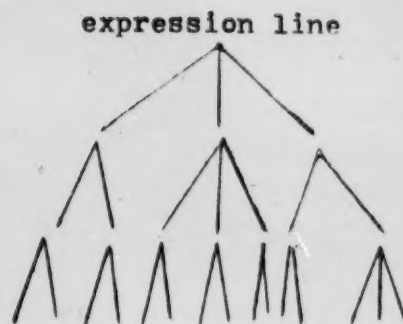
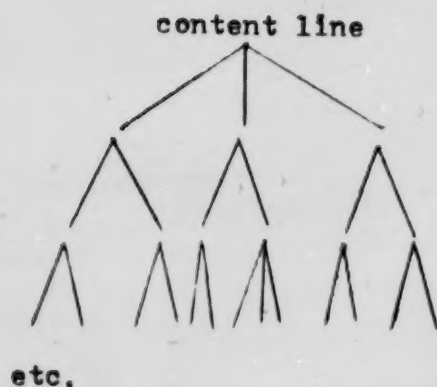


*GII

op 1

op 2

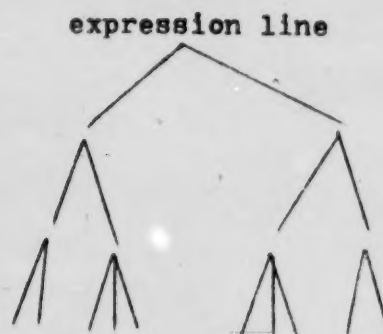
op 3

*GIII

op 1

op 2

op 3



Each operation includes several measures and tests that must be applied. One of these is the commutation test.

Commutation Commutation is a correlation in one plane that relates to a correlation in the other plane. But not all correlations that relate to some correlation in the other plane are examples of commutation; they may be connotatively conditioned.

Like other concepts or terms that are being discussed

here commutation has a precise definition. However, in this presentation I do not introduce the intricate structure of exact definitions on which glossematics is built, but prefer to speak in more general terms about the ideas and mechanics contained in the theory. It should therefore be quite clear that my discussion of, for example, commutation gives only a popular and incomplete picture of that function.

In the expression k and h are members of a category, namely the category of elements that appear initially in the syllable, and between k and h there is a paradigmatic function that relates or has a syntagmatic function to a correlation between for example the content units 'hat' and 'cat'.

expression		content
-		'-'
-		'-'
-		'-'
-		'-'
h	: R	'hat'
k	:	'cat'
-		'-'
-		'-'
-		'-'

The commutation test is performed by replacing one element from one plane with another element from the same plane and from the same category; if this replacement causes a change in the other plane, then the two first mentioned elements are said to contract commutation; in the given example k and h contract commutation, symbolized k;h. Elements that contract mutual commutation are invariants.

The opposite of commutation, absence of commutation, is substitution, which is the correlation found between

variants.

Variants I can pronounce "cat" with a strongly aspirated $\underline{k}$ or with an almost unaspirated $\underline{k}$, but the difference between the two $\underline{k}$'s corresponds to no difference in the content, and so the two $\underline{k}$'s do not contract commutation, but are variants with mutual substitution.

Another kind of variants are those that are said to be conditioned by their environments. The $\underline{k}$ found in "kit" differs from the one in "cut", but nowhere does the exchange of the one $\underline{k}$ with the other $\underline{k}$ produce a difference in the plane of content. They are reduced to variants of one invariant. It can be recognized that their occurrence is conditioned by the following vowel. The $\underline{k}$ -variant found in "kit" presupposes the following $\underline{i}$ and can be written $\underline{k}^i$; the $\underline{i}$ is a $\underline{k}$ -colored variant of the invariant $\underline{i}$, $\underline{i}^k$, that presupposes $\underline{k}$. Thus the two variants $\underline{k}^i$ and $\underline{i}^k$ contract solidarity, and the Λ -colored $\underline{k}$ -variant in "cut", $\underline{k}^\Lambda$, is solidary with the $\underline{k}$ -colored variant of $\underline{\Lambda}$, $\underline{\Lambda}^k$. Such solidary variants are called varieties. In the example with strongly aspirated $\underline{k}$ and less aspirated $\underline{k}$ no conditions of environments determine the appearance of either of the two variants, they contract combination with their environments and are therefore called combined variants or variations.

In language descriptions it has been common practice to include and discuss not only invariants, but also some solidary variants, for example allophones or specific uses of Latin cases. But there seems to be no structural crite-

tion for which variants to include and which not to include.

In glossematics a distinction is made between universal and particular variants. Universal variants are derivatives of an analysis of invariants into variants to which all functions can be subjected. Any invariant can be analyzed into a number of varieties, solidary variants, fixed by the number of other functions in the chain. In the word "cat", k has two varieties, one which is solidary with æ, k^æ, and one solidary with t, k^t; in the word "fact", f has three varieties, f^æ solidary with æ, f^k solidary with k, and f^t solidary with t. The two varieties of k found in kæt contract mutual combination; k^t combines with kⁱ in "kit", and k^æ combines with k^p in "cap". Of course æ and t also have two varieties each, æ^k, æ^t, t^k, t^æ. Each of these varieties can again be found to have an infinite number of combined variants, variations. Every time I say the word "cat", there will be new variations of the varieties k^æ, k^t, æ^k, æ^t, t^k, and t^æ. This division of varieties into variations and of variations into new varieties is continued,

invariants		<u>k</u>	<u>æ</u>	<u>t</u>						
varieties		<u>k^t</u>	<u>k^æ</u>	<u>æ^k</u>	<u>æ^t</u>	<u>t^k</u>	<u>t^æ</u>			
variations	<u>k^t₁</u>	<u>k^t₂</u>	<u>k^t_n</u>	<u>k^æ₁</u>	<u>k^æ₂</u>	<u>k^æ_n</u>	<u>æ^k₁</u>	<u>æ^k₂</u>	<u>æ^k_n</u>	etc.
varieties	<u>k^{æ,æ}₁</u>	<u>k^{æ,æ}₂</u>	<u>k^{æ,æ}₂</u>	etc.						

k^æ is the variety of k that appears before æ (k^æ $\longleftrightarrow$ æ^k); k^æ₁ is one variation of the variety k^æ; and k^{æ,æ}₁ is the variety of the variation k^æ₁ that appears before æ^k.

(k^{æ,æ}₁ $\longleftrightarrow$ æ^{k,k}₁).

Since this division into variants and variants' variants is universal, i.e. it "can be performed on any object whatsoever" (Réf Df 1), it is carried out once and for all in the theory and does not have to be repeated in each new description or with every variant.

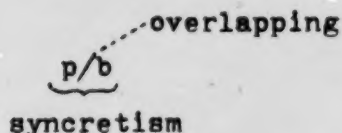
Particular variants are specific to certain invariants, and they cannot be found by an analysis that can be performed on any object whatsoever.

In discussing connotators I said that steal and swipe were reduced to variants of one invariant when their connotators were removed. They are examples of particular varieties solidary with the connotators.

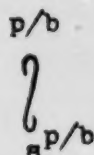
Particular variants cannot be described and taken care of once and for all in the theory, they are registered as such and in the further analysis they are kept apart and described separately. It is perhaps especially obvious that this is necessary if one considers schemata that have been found to be particular varieties solidary with different national languages.

Syncretism In initial position the expression elements p and b are invariants as seen for example in the words "pan" and "ban". By replacing one with the other a change in content is brought about, in other words there is commutation between the two, p, b. However, in the position following s, p and b are not commutable, the replacement of one with the other produces no change in the content plane, "span", "spare". The commutation is suspended. A suspended commu-

tation is called an overlapping; thus after s, p and b contract overlapping, symbolized p/b. The overlapping is said to establish a category whose members are p and b, and such a category established by an overlapping is called a syncretism:

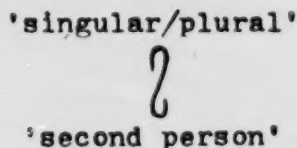


The overlapping, i.e. the suspended commutation between p and b, is found only after s; there is solidarity between a variety of s and the overlapping:



This solidarity between a variant and an overlapping is called dominance; the variant, here s^{p/b}, dominates the overlapping.

An example from the plane of content is the syncretism established by an overlapping contracted by the content elements 'singular' and 'plural' under dominance of the content element 'second person', cf. "you" and "are":



When the commutation between p and b is suspended, neither of them is an invariant, but their syncretism is an invari-

ant; it contracts commutation with for example l, cf. "spy" and "sly". p/b and l are invariants and members of a paradigm that has several other members, m, n, k/g, etc.

There are five vowels in Mam, but in weakly stressed positions only a syncretism of all five of them appears,

nɛeyəp	'my palm cape'
nɛilnəpʔ	'my marimba'
nɛʔooləm	'my board'
wuukʔəl	'my cooking pot'
waaqʔən	'my work'
nqʔootəx	'my corn drink'

ə signifies the syncretism of the five vowels. The first consonant in these words, n or w, is sign expression for 'first person', and the words sound somewhat differently when they are not modified by any formant for 'person':

ɛyep	'palm cape'
ɛnapʔ	'marimba'
ɛʔlom	'board'
wkʔil	'cooking pot'
əqʔuntl	'work'
qʔotx	'corn drink'

In these forms the vowels do not contract overlapping, and by generalizing from this "unpossessed form" one can introduce the vowel found here in place of ə in the "possessed form" and thereby resolve the syncretism. A chain with its resolvable syncretisms resolved is written in ideal notation,

whereas it is called actualized when the syncretisms are not resolved. I first wrote the words in actualized notation with ə representing the syncretism. In ideal notation they look as follows:

nɛeeyep	'my palm cape'
nɛiinapʔ	'my marimba'
nɛʔoolom	'my board'
wuukʔil	'my cooking pot'
waaqʔun	'my work'

In the last word, actualized [nɛʔootex], the syncretism is irresoluble; no variant of the word has a second vowel that is not a syncretism.

Thus syncretisms can be resoluble or irresoluble. The mentioned syncretism, p/b dominated by a preceding ə, is irresoluble.

The example from Mam shows also a slightly different kind of syncretism, namely an overlapping with zero. In the forms ɛyep, ɛnapʔ, ɛʔlom, etc. there is a latent vowel between the two first consonants, i.e. a vowel that contracts overlapping with zero, e/ø, etc. This syncretism is resolvable, and consequently in ideal notation I write ɛeyep, ɛinapʔ, ɛʔolom with the syncretisms resolved, as opposed to the actualized notation: [ɛyep] or [ɛ^e/øep], [ɛnapʔ] or [ɛⁱ/ønapʔ], [ɛʔlom] or [ɛ^o/ølom], etc.

Since the syncretism ə in nɛʔootex is irresoluble, the distinction between ideal and actualized notation is irrelevant for that syncretism.

Syncretisms and resolubility or irresolubility of syncretisms are entirely a matter of form, not in any way influenced by manifestation.

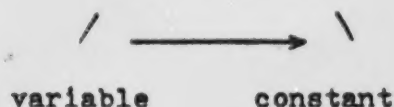
From the point of view of usage it is, however, relevant to observe that syncretisms can be manifested in two different ways. Either their manifestation is identical with the manifestation of one of its functives, in which case the manifestation is called an implication, or the manifestation is a fusion, and it is identical with the manifestation of none or all of the functives entering the overlapping.

The syncretism s/z in English, dominated by a preceding stop is an implication, "caps" "cabs" (kæp^s/z and kæb^s/z), in the first word s is implied by z (or z implies s), and in the second word s implies z (or z is implied by s). The manifestation of the syncretism is identical with the manifestation of one of its functives.

The manifestation of the syncretism in Mam, i/e/a/o/u (or ə), is not identical with the manifestation of any of its five members, and it is a fusion. The English syncretism p/b is also manifested as a fusion.

Thus in schema there is a distinction between resoluble and irresoluble syncretisms, and also in schema resoluble syncretisms can be represented either in ideal or actualized notation. In usage one can talk about the manifestation of a syncretism either as a fusion or as an implication.

Catalysis In the beginning I mentioned that there is a selection between rising and falling intonation,



On the other hand, it is not unlikely that a clause modified by rising intonation should appear in isolation, for example, /ar yuw howm (and he is not home) or /yuw ɬast tray ɔet wan mor taym (said in a menacing tone of voice). However, since I have registered the selection $/ \longrightarrow \backslash$, I know that a clause with falling intonation should follow, and I therefore introduce or encatalyze it. I catalyze /yuw ɬast tray ɔet wan mor taym by replacing this whole expression clause with /yuw ɬast tray ɔet wan mor taym \. The line represents a syncretism of all expression clauses modified by $\backslash$. I cannot introduce any specific clause. Only contracts the selection.

If the content clause 'they put it further out than my brother' is catalyzed, it can be replaced by nothing more specific than the following, 'they put it further out than my brother verb theme, tense, third person, plural/singular'. Only a syncretism of the tenses can be encatalyzed since the tense in the first clause as it here stands is in itself a syncretism of 'past' and 'non-past'. The verb theme is also a syncretism since a number of verb themes fit the place, 'put', 'manage', 'do', etc.

'They put it further out than my brother' and 'they put it further out than my brother verb theme, tense, third

person, plural/singular' are variants. They do not contract commutation since the encatalyzed unit 'verb theme, third person, plural/singular' is a unit of content whose expression is zero. /yʊw ʃʌst treɪ ðæt wʌn mɔr taɪm and /yʊw ʃʌst treɪ ðæt wʌn mɔr taɪm \ _____ are also variants; I have encatalyzed an entity of expression, but the content is zero because the selection is between categories of expression, so if I replace /yʊw ʃʌst treɪ ðæt wʌn mɔr taɪm with /yʊw ʃʌst treɪ ðæt wʌn mɔr taɪm \ _____ to see if there is commutation, I find that no difference is produced in the content, and the two contract mutual substitution.

Thus in catalysis, cohesions, i.e. determinations and interdependences, are registered by replacing a unit with its variant, a variant which is composed of the original plus an added or encatalyzed unit. If the cohesion is contracted by categories of content, the expression of the encatalyzed unit is zero; and if the cohesion is contracted by categories of expression then the content of the encatalyzed unit is zero:

expression: /yʊw ʃʌst treɪ ðæt wʌn mɔr taɪm \ _____
 content: 'you just try that one more time ø

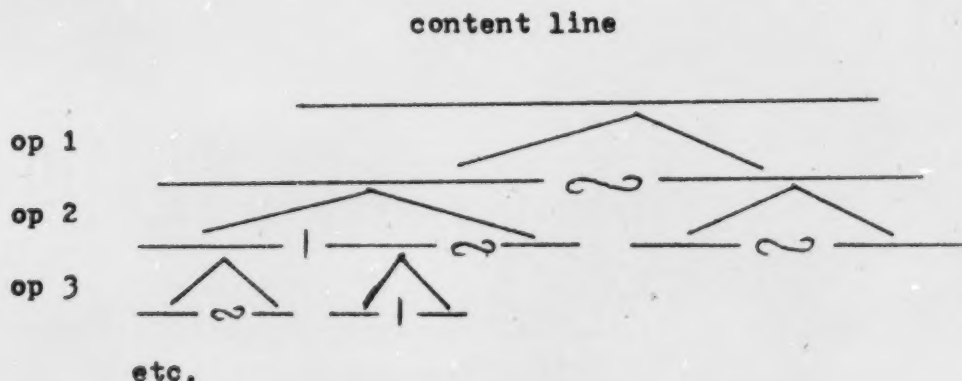
*GI - *GII - *GIII I have already mentioned that the analysis is carried out in three series of operations, *GI, *GII, and *GIII. *GI has only one operation in which the text or process is divided into the content line and the expression

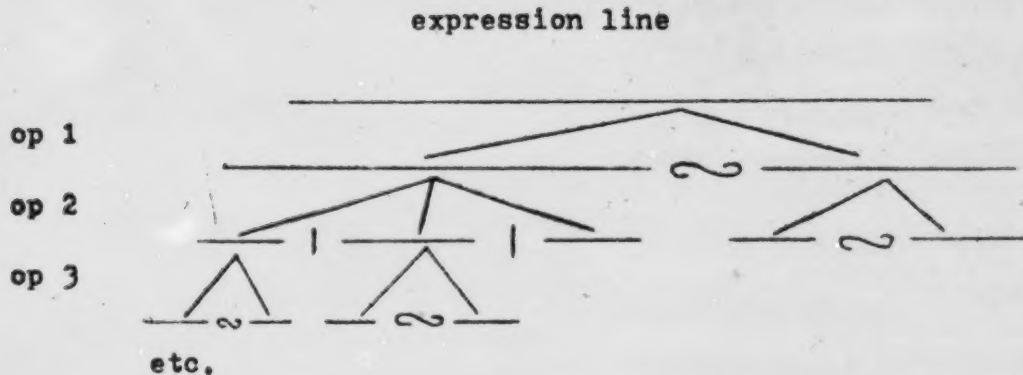
line.

*GII and *GIII differ as to function chosen as the basis of analysis, but in both series, the analysis starts out with the undivided line of content and the undivided line of expression, and thus the operations in these series have two sections, one treating expression and the other content.

With respect to functions, one possibility is to choose solidarity as the basis of analysis in *GII in which case selection is the basis of analysis in *GIII; the other possibility is to choose selection in *GII and then have solidarity as basis of analysis in *GIII. This choice is not made arbitrarily, but through considerations for exhaustiveness and simplicity.

Thus if solidarity is chosen as basis of analysis in *GII, the two lines, the content line and the expression line, are divided into parts with mutual solidarity, and these parts are again divided into mutually solidary parts until the analysis with solidarity no longer gives any result,





The diagram showing the analysis of the expression line appears after the diagram with the analysis of the content line only through lack of space; the analysis is performed simultaneously on both lines.

When analysis with solidarity no longer gives results, the analysis is said to be exhausted, and the content line and the expression line are analyzed a second time in GIII, now with selection as basis of analysis.

The first step in every operation is to set up the functional category which is then analyzed into functival categories.

When the function chosen as basis of analysis is selection, the functival categories are:

- {iβ} appearing only as selected
- {iB} appearing only as selecting
- {iγ} appearing as selected by one functive and as selecting another functive
- {iΓ} appearing neither as selected nor as selecting

{ } are used around categories. This division of the functional category into functival categories is independent of

the description of individual languages; it belongs in the theory and forms part of a general description of bound analysis, i.e. analysis with a given function as basis of analysis. In that general treatment of bound analysis, Greek letters are used as symbols.

When solidarity is chosen as basis of analysis, the functival categories are:

- {iβ} appearing only as solidary
- {iB} appearing only as combined
- {iγ} appearing as solidary in respect to one functive and as combined in respect to another functive
- {iΓ} appearing neither as solidary nor as combined

Finally the functival categories are analyzed into elements. Imagine, for example, that I have performed a number of operations in *GIII with selection as basis of analysis and that the elements or derivatives of the last operation were syllables, CV and V, which I now want to analyze further. I set up the functional category, divide it into functival categories, and in analyzing the functival categories into elements I find that only {iβ} and {iB} are realized; the vowels appear only as selected and the consonants appear only as selecting. In other words, {iγ} and {iΓ} cannot be subjected to analysis, they are said to be virtual.

{iβ} :: a, o, e, etc.

{iB} :: p, t, k, etc.

$$\{i\gamma\}$$

$$\{i\tau\}$$

The symbol $::$ means is (are) analyzed into.

Commutation is the function used in establishing the number of elements into which a functival category is analyzed.

Complex elements that are registered in the same operation as are the simple elements of which the complex ones are composed are further divided in that operation. If b, r, and br are among the first degree elements registered in a certain operation, then br must be analyzed into the second degree elements b and r in the same operation in order to avoid that elements or derivatives of one operation have mutual substitution with derivatives of a later operation.

There are also other measures leading to the reduction of elements that must be applied in every operation.

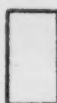
Whenever a functival category is analyzed into a restricted number of elements, the correlations between these elements are established through free analysis. Free analysis can also be applied to any section of a functival category with an unlimited inventory.

Free Analysis Free analysis is analysis based not on pre-supposition, but on oppositions and the suppression of oppositions.

Narrow and wide are two terms in an opposition. This opposition can be viewed as an exclusion, i.e. a relationship in which the terms share no variants: narrow is not

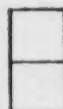
wide and wide is not narrow; or it can be viewed as a participation in which the terms do share variants. The clause "how wide is the board?" contains no indication of whether the board is narrow or wide; the opposition is suppressed, and wide in the context means both narrow and wide at the same time. Suppression of the same opposition is found in the noun width derived from wide, but different from both narrowness and wideness. Thus, narrow and wide share the variant narrow and they contract participation.

The area of the opposition here discussed can be represented by the following box,



It can further be divided into two mutually exclusive fields,

narrow
wide



and then the spread (extension) of each of the two participants can be mapped onto the diagram,

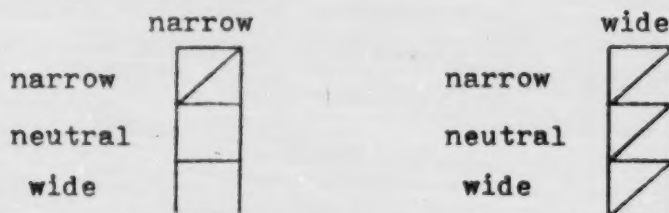


The clause "how wide is the board?" showed that one

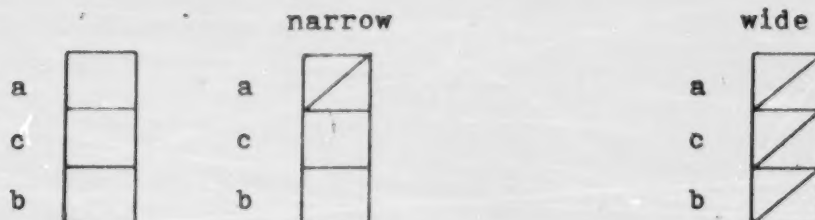
variant of wide covers the whole area, but no variant of narrow can cover the bottom field, narrow is never used for wide.

The more broadly defined term (or participant) in an opposition is called the extensive one (here wide); its meaning or use extends over that of the intensive term, which is more restricted.

In the example with narrow and wide, the area was divided into two fields and there were two participants in the opposition. However, such symmetry is not a condition for free analysis. The narrow - wide opposition can just as well be analyzed on a diagram with three fields,



Neither do the names given the fields have to correspond as neatly to those of the participants as they do in the example. On the contrary, in general they are simply called a, b, and c.

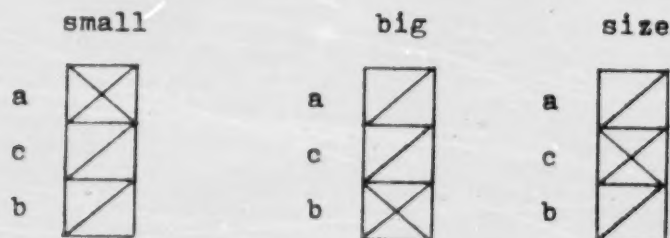


Substantial names for the fields are not necessary or even appropriate since the participants are not one by one fit

into the diagram which has been previously split up and named to suit the category. The category is a general frame by which the mutual relationships between elements of any category are illustrated and expressed.

Neither from small nor from big is a neutral noun formed in analogy with width, instead the noun size is used. I shall try to analyze these terms together to show how a category with three members may be described.

The relationship between small and big appears to be similar to the one found between narrow and wide, one can say "how big is it?" quite analogously with "how wide is the board?" Big extends over the whole area, but size also covers all three fields. In comparing big and size it can be observed that big and small together form a pair that is opposed to size, and that big, due to its clear opposition to small, emphasizes or insists upon one extreme of the area, whereas size contrasting with the pair small - big insists upon a neutral side of the category. All this is expressed in the diagrams in the following way,



Each of the various ways of covering the three-fielded diagram is symbolized by a Greek letter. Small Greek letters indicate intensive terms and capital Greek letters indicate

extensive terms,

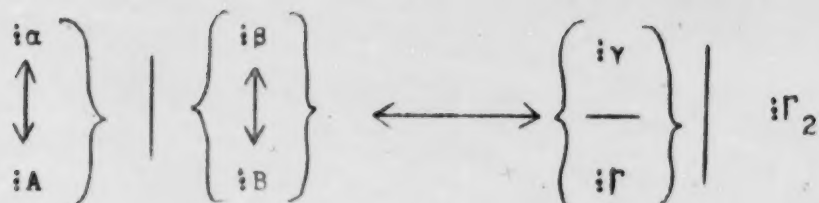
	$:\alpha$	$:A$	$:\beta$	$:B$	$:\gamma$	$:\Gamma$	$:\Gamma_2$
a							
c							
b							

To say that a term insists upon a certain field, , means that it includes that field in all its first degree variants; $:\Gamma$, for example, can have the following first degree variants, ac, bc, c, and abc, but not ab.

$:\Gamma_2$ covers a and b alternately, but insists on no field.

The pair $:\beta :B$ expresses a contrary correlation, and $:\gamma :\Gamma$ a contradictory correlation. In a contradictory correlation one term is everything that the other term is not and vice versa ($:\gamma$ insists upon a and b versus $:\Gamma$ which insists upon c); whereas in a contrary correlation there is something which is neither the one term nor the other ($:\beta$ insists upon a and $:B$ upon b, but c is insisted upon by neither $:\beta$ nor $:B$).

The opposition in a category of two members can indifferently be regarded as contradictory or contrary, and so $:\alpha :A$ are used in categories with less than three members. But with three or more participants the distinction is needed; in other words, there are certain presuppositions between the pairs which determine their possible configurations:



There is interdependence between $i\beta \longleftrightarrow iB$ and $i\gamma \mid i\Gamma$ and within $i\beta \longleftrightarrow iB$, so that the possible configurations with three members are $i\beta \ iB \ i\gamma$, $i\beta \ iB \ i\Gamma$, and $i\beta \ iB \ i\Gamma_2$, whereas $i\alpha$ and iA cannot occur with a beta (if there are only three participants) since the two betas are interdependent.

To sum up, the functions between and within the pairs make possible only the following configurations:

$i\Gamma_2$

$i\alpha \ iA$

$i\alpha \ iA \ i\Gamma_2$

$i\beta \ iB \ i\gamma$

$i\beta \ iB \ i\Gamma$

$i\beta \ iB \ i\gamma \ i\Gamma$

$i\beta \ iB \ i\gamma \ i\Gamma_2$

$i\beta \ iB \ i\Gamma \ i\Gamma_2$

$i\beta \ iB \ i\gamma \ i\Gamma \ i\Gamma_2$

$i\alpha \ iA \ i\beta \ iB \ i\gamma$

$i\alpha \ iA \ i\beta \ iB \ i\Gamma$

$i\alpha \ iA \ i\beta \ iB \ i\gamma \ i\Gamma$

$i\alpha \ iA \ i\beta \ iB \ i\gamma \ i\Gamma_2$

$i\alpha \ iA \ i\beta \ iB \ i\gamma \ i\Gamma \ i\Gamma_2$

The configuration of the category of width was: narrow i α , wide iA, and of that of size: small i β , big iB, size i Γ .

The two examples I have illustrated free analysis with so far were taken from content substance. Factors relevant for determining the configuration of categories of form are overlapping and dominance. Overlappings are contracted by an intensive and an extensive term (two intensives or two extensives cannot contract overlapping unless the syncretism has three members, for example, intensive/extensive/intensive); and intensive terms dominate overlappings.

An overlapping is contracted by 'first person' and 'second person' under the dominance of all verbs but 'be',

I <u>see</u>	}	'first/second'
you <u>see</u>		
he sees		

another overlapping is contracted by 'first' and 'third' dominated by 'be' and 'past tense',

you were	}	'first/third'
I <u>was</u>		
he <u>was</u>		

'second person' dominates two overlappings, one between 'singular' and 'plural', 'singular/plural' $\longleftrightarrow$ 'second',

I	we	am	are
he	they	is	are
<u>you</u>	<u>you</u>	<u>are</u>	<u>are</u>

and one between 'nominative' and 'oblique' case,

I	me		
he	him		
<u>you</u>	<u>you</u>	'nom/obl'	↔ 'second'

Since 'second person' dominates overlappings it is defined as intensive, it contracts overlapping with 'first person' which must therefore be extensive, 'second' is 'first' isB. 'First' and 'third' also contract overlapping and since 'first' has been found to be extensive, 'third' must be intensive,

'second'	is
'first'	isB
'third'	isY

It is not surprising that 'third' turns out to be intensive; it can be observed that if some term has an explicit marker or formant in comparison with the other terms having zero, then the explicitly marked term is often intensive.

Operation The analysis in *GII and *GIII of the content line and the expression line does not lead to the registration of syllables and phonemes or morphemes and derivatives, etc. The elements that result from the two analyses are identified by the functions and by the operations. Thus the elements arrived at, for example, in the seventh operation of *GIII with selection as the basis of analysis

are selection units of seventh degree.

Operation series *GI, *GII, and *GIII must be imagined as a theoretical frame that stays the same for all descriptions, and into which the various schemata are fit differently. In the analysis of some schema certain operations and certain functional categories remain virtual, but in the analysis of some other schema they are realized. I gave an example from an operation in the analysis of some language as follows,

{iB} a, o, e, etc.
 {iB} p, t, k, etc.
 {iv} (virtual)
 {ir} (virtual)

If the language analyzed had been Mam, the analysis would turn out differently,

{iB} a, o, e, etc.
 {iB} ʔ, x, s, l, etc.
 {iv} p, t, k, etc.
 {ir} (virtual)

ʔ, x, s, l, etc. appear only as selecting; and p, t, k, etc. appear as selected by ʔ and selecting a, o, e, etc.

The frame remains unchanged, but is filled differently by the two descriptions.

In order to subdivide the long series of operations certain operations are singled out and fixed through some characteristics of their derivatives. The derivatives of these

specific operations are then given operative or analytic names; "LEXIAS are highest-Degree Elements each of which can alone constitute a Catalyzed Unit of next lower degree." (Rés Df 192), and "LEXEMES are Parts of Lexias." (Rés Df 193). Thus any chapter can constitute a book, any paragraph can constitute a chapter, any sentence can constitute a paragraph, but not all clauses can constitute sentences; clauses are therefore operatively called lexemes and sentences lexias.

I have used the words book, chapter, paragraph, sentence, and clause in order to make the example clear, and such "real" names can be given to derivatives of the operations, but only as a purely practical measure.

Another fixed operation yields syllabemes that are defined as "the highest-Degree Elements of which each alone can constitute an unCatalyzed Lexia." (Rés Df 194)

Taxemes Virtual elements are elements that cannot be analyzed further through particular analysis. The "virtual element[s] yielded at the stage of analysis where selection is used for the last time as the basis of analysis" (PTL Df 94) are called taxemes; and a number of taxemes, expression taxemes and content taxemes, are the final outcome of the analysis in *GIII. The taxemes are not all arrived at in the last realized operation of the series. Taxemes can appear in earlier operations; this is the case of, for example, intonations. Expression lexemes are analyzed into intonation and lexeme theme which is the lexeme without the into-

nation. Intonations cannot be analyzed further in *GIII and are therefore registered as taxemes.

In a later operation series, *g, the taxeme categories are subjected to further analysis and to redistribution. The operations and the procedure of operation series *g will be discussed on p. 239ff and p. 285ff.

Principles The glossematic theory builds upon certain principles. (Most of these principles are quoted and discussed in PTL.) The first principle, from which others are deduced, is called the empirical principle: "The description shall be free of contradiction, exhaustive, and as simple as possible. The requirement of freedom from contradiction takes precedence over the requirement of exhaustive description. The requirement of exhaustive description takes precedence over the requirement of simplicity." (Résumé Pr 1)

This and the six other principles (Pr 2 the simplicity principle, Pr 3 the principle of economy, Pr 4 the principle of reduction, Pr 5 the principle of generalization, Pr 6 the principle of exhaustive description, and Pr 7 the refined principle of reduction), which are deduced from the first, provide the general guide lines for the individual descriptions, and they are consulted in every operation of the analysis. Moreover, no other and tacit principle serve as criteria in the analysis. Thus it is never a question whether a certain analysis is possible or intuitively correct, but only whether it is in agreement with

with the principles contained in the theory. This may be particularly striking for example in problems involving a great deal of catalysis, and it is there not relevant to ask whether catalysis is warranted or not, but rather whether there are any arguments against catalysis.

*GI: ANALYSIS OF THE PRE-SYNTAGMATIC

*GI is the symbol used to identify the first operation series. It has only one operation in which the pre-syntagmatic is analyzed into the two pre-lines, the content pre-line and the expression pre-line.

In the operation series *GI, *GII, and *GIII, the units treated are pre-units according to Rés op Df 146, "PRE-RELATES are Relates that are registered in an Op without its being possible to determine in that Op whether the registration can be maintained as definitive. -- Correspondingly, we may speak of PRE-ELEMENTS, PRE-UNITS, PRE-PARTS, etc. and, in general, of PRE-FUNCTIVES. Pre-functives are symbolized with a prefixed ?."

Thus, the elements that are registered in each operation of *GI - *GIII are pre-elements, and they are reduced to elements in the final operation series, *g, where their registration is confirmed.

The symbols used in this presentation are contained in Rés, but a number of them are also found in Hjelmslev 1954. An asterisk preceding a symbol refers it indifferently to one of the two planes or to both at the same time, whereas a Latin letter without a preceding asterisk refers unambiguously to a class of the expression plane, and Greek letters refer to classes of the content plane. Double underlining indicates operation.

I shall explain the individual symbols and their components when they are used for the first time, and when they appear again later, they will be accompanied only by a translation into words.

In the first and only operation of the first operation series, *GI1, the pre-syntagmatic is analyzed into the two pre-lines,

$$?Y^{\circ}G^{\circ}R :: ?E^{\#}_{\circ}, ?Y^{\#}_{\circ}$$

* E° is the symbol for a plane, g° for plane of expression and y° for plane of content. The R shows that the object in question, here a syntagmatic (or a semiotic process), is considered from the syntagmatic point of view. A paradigmatic, i.e. a semiotic system, is symbolized $Y^{\circ}E^{\circ}!$, where the ! indicates the paradigmatic point of view. $^{\#}_{\circ}$ symbolizes line, i.e. component of a syntagmatic; and the two colons, ::, mean is (are) analyzed into.

The analysis of the pre-syntagmatic does not lead immediately to the registration of the two pre-lines. As in all the operations a function must first of all be chosen as basis of analysis--it appears that solidarity in *GI1 gives the most exhaustive subsequent analysis, cf. Rés N 55--then the functional category is registered, and it is divided into functival categories (cf. p 30) which are analyzed into elements. Thus,

$$\begin{aligned} ?Y^{\circ}G^{\circ}R :: ?\sim 1 :: \{iB\} :: ?E^{\#}_{\circ}, ?Y^{\#}_{\circ} \\ \{iB\} \\ \{iY\} \end{aligned}$$

{i $\bar{r}$ }

in other words, the pre-syntagmatic, $\gamma^\circ g^\circ R$, is analyzed into solidary pre-relates of first degree, $\gamma^\sim 1$, which are analysed into the four functival categories, {i β }, {i $\bar{\beta}$ }, {i γ }, and {i $\bar{\gamma}$ }. Only {i β } is realized, and it is analyzed into two pre-elements, $\gamma^\#_g$ and $\gamma^\#_\circ$.

The operation is described briefly in Rés Rg 106, "The functional category registered in *GI1 is called PRE-LINE (symbol: $\gamma^\#_\circ$), and the elements PRE-LINES. If the number of elements is two and only two, they are arbitrarily designated CONTENT PRE-LINE (symbol: $\gamma^\#_\circ$) and EXPRESSION PRE-LINE (symbol: $\gamma^\#_g$)."

It is not possible to apply the commutation test in the present operation. There are other tests to assure that the two elements, the two pre-lines, are invariants.

Some of these other tests are applied not only in *GI1, but also in the operations of *GII and *GIII, and some others are applied in the operations of *GII and *GIII, but not in *GI1; however, I shall not go into this, but must refer the reader to Rés.

The realized functival category, {i β }, must be subjected to free analysis according to Rés Rg 74, "The requirement of exhaustive description contained in Pr 1 [the empirical principle] implies that free articulation is demanded if the elements of a functival category are of restricted number."

Since the two correlates do not contract overlapping, and since neither one of them dominates an overlapping, it

cannot be determined on the basis of form which of the following two configurations is to be chosen:

$$\begin{array}{ll} \text{either} & i\alpha' = \varepsilon^{\#}\circ \\ & iA' = \gamma^{\#}\circ \\ \\ \text{or} & i\alpha' = \gamma^{\#}\circ \\ & iA' = \varepsilon^{\#}\circ \end{array}$$

The symbols $i\alpha'$ and iA' are used rather than $i\alpha$ and iA precisely to indicate that the terms are contensives, i.e. that they cannot be determined as being either intensives or extensives (Rés Df 119).

In the present case the first of the two configurations is preferred upon considerations of substance; the content is extensive, it can include both content and expression, in other words, one can talk about elements of expression.

*GII and *GIII: ANALYSES OF THE PRE-LINES

In *GII and *GIII the object for analysis is not the pre-syntagmatic as it was in *GI, but the object is the pre-lines. Every operation in both *GII and *GIII has two sections, one dealing with the analysis of the content pre-line, the other dealing with the analysis of the expression pre-line.

The pre-lines are first analyzed in *GII with one function as basis of analysis, and then they are analyzed in *GIII with another function as basis of analysis. Thus, the two operation series differ by the functions taken as basis of analysis in each one of them. I have tentatively chosen solidarity as basis in *GII and selection as basis of analysis in *GIII.

The operations of each of the two operation series are divided into three operation chains. The first one reaches from the first analysis of the undivided pre-lines and to the registration of lexemes (cf. p 41); the second operation chain is called lexematics, and it includes the first analysis of lexemes and the registration of syllabemes; the third operation chain is called syllabematics, it contains the first analysis of syllabemes and ends with the registration of taxemes.

In the first operation chain the operations are arbitrarily labelled *n'a, *n'o, *n'c, etc. in *GII and *n1.

*n2, *n3, etc. in *GIII. The operations in lexematics are designated *s'1, *s'2, *s'3, etc. in *GII and *s1, *s2, *s3, etc. in *GIII. In syllabematics the operations are in *GII called *t'1, *t'2, *t'3, etc. and *t1, *t2, *t3, etc. in *GIII.

It can be specified whether the content section or the expression section of a given operation is intended by using the same symbols as here given, but without a preceding asterisk for the expression and by leaving out the asterisk and using the corresponding Greek letters instead of the here given Latin ones for the content. Operation *s'3, for example, has an expression section σ'3 and a content section σ'3.

Each operation can be subdivided as much as is needed in given descriptions. Thus, for example, *n'a can be subdivided into *n'a1, *n'a2, *n'a3, etc. and *s1 can be subdivided into *s1a, *s1b, *s1c, etc.

*GII: ANALYSIS OF THE PRE-LINES WITH
SOLIDARITY AS BASIS OF ANALYSIS

The first part of *GII is concerned with separating out connotators. However, I cannot actually carry out the operations in which the connotators are recognized because of the extent of the object on which this analysis is performed.

The pre-syntagmatic that I analyzed in *GI was the pre-syntagmatic of all languages, and the pre-lines that are to be analyzed here must be imagined as two endlessly long chains, the content pre-line and the expression pre-line of all languages.

These endlessly long chains must be divided into as few parts as possible. They are first--each in their section of *n'a--divided into three parts, three shorter chains

*n'a

γ'a $\gamma\gamma^{\#}e$:: $\gamma\gamma^{\sim}1$ = /content chains characterized
by style/

$\gamma\gamma^{\sim}1$:: {iβ} :: $\gamma\lambda i\beta'$, $\gamma\lambda iB'$, $\gamma\lambda i\gamma'$
 {iB}
 {iγ}
 {iΓ}

$\gamma\lambda:\beta'$ = /content chain in creative style/
 $\gamma\lambda:B'$ = /content chain in normal style/
 $\gamma\lambda:i\gamma'$ = /content chain in archaizing style/
 $\gamma\lambda:\beta'$ $\equiv$ var. $\gamma^N \sim \underline{x}\Gamma$ creative style
 $\gamma\lambda:B'$ $\equiv$ var. $\gamma^N \sim \underline{x}\Gamma$ normal style
 $\gamma\lambda:i\gamma'$ $\equiv$ var. $\gamma^N \sim \underline{x}\Gamma$ archaizing style

This reads: the content pre-line, $\gamma^{\#}o$, is analyzed, i.e., into the functional category $\gamma \sim 1$, i.e. solidary content pre-relates of the first degree.

The functional category, $\gamma \sim 1$, is analyzed into the four functival categories $\{\beta\}$, $\{B\}$, $\{i\gamma\}$, and $\{\Gamma\}$ of which the last three are virtual and the first is analyzed into three elements with the following configuration resulting from free analysis, $i\beta' : B' : i\gamma'$. The three elements are operatively identified as /content chain in creative style/, /content chain in normal style/, and /content chain in archaizing style/.

Slashes around the operative names for elements that result from the analysis of the functival categories indicate that these names are simple practical labels that may anticipate a later analysis. But they are of course not arrived at through the analysis in the given operations.

The pre-element defined as $i\beta'$, $\gamma\lambda:\beta'$, is now reduced, $\equiv$, to the variant content pre-chain--a raised N signifies chain--solidary with a connotator, $\underline{x}\Gamma$, named creative style, and the other two pre-elements are reduced analogously. In other words, three connotators are removed and the regis-

tered pre-elements are found to have mutual substitution and are reduced to variants, more precisely to varieties each solidary with one connotator.

This reduction is performed according to Rés Rg 63, "If a connotator is found in one or more pre-elements, it is ...to be deducted in accordance with Pr 7, and converse pre-elements are reduced to a single element ... The converse varieties of the elements concerned (varieties registered by the solidarity of each to its connotator...) must meanwhile be so recorded that they are carried under the further procedure as distinct particular varieties..."

Pr 7 is the refined principle of reduction; it says, "Any analysis (or analysis complex) in which functives are registered with a given function as basis of analysis shall be so made that it leads to the registration of the lowest possible number of elements."

"CONVERSE Functives are functives that acquire mutual Substitution when the Connotators Entering into them are deduced." (Rés Df 155)

The solidarity through which the three pre-elements were registered is not the solidarity they contract with their connotators. The solidarity is found between the three chains,

pre-line:

pre-elements of
of $\gamma'a$:



*n'1

n'11 In the expression section of *n'11 expression elements are analysed into stretches of connected speech that I simply label /stretches/. They occur independently of each other, and they contract mutual combination.

n'11 $?g^x$:: $?g^{x+1}$ = /stretches/

$?g^{x+1}$:: {iB}

{iB} :: n711

{iV}

{iF}

Solidary units of pre-glossems of a certain degree, $?g^x$, are analyzed into the functional category $?g^{x+1}$ that is analyzed into the four functional categories. Only {iB} is realized, and it is divided into elements, n711. The elements do not have to be subjected to free analysis since their number is unrestricted.

In registering /stretches/ as elements in the present operation I also separate out a signal. Signals are "Invariants without mutual Function." (Rés Df 154). The signal for /stretches/ is a very long interval with no speech.

According to Rés Rg 61 1° "Signals admit no particular further analysis and are therefore virtual. ...they are carried through the procedure as distinct entities."

y'11 The content section of *n'11 is not carried out, in agreement with Rés Rg 136, "...no Op is performed in a low-

er Op-series that would only lead to registration of entities that will be registered in a higher Op-series". There is selection between the content elements that correspond to the expression elements /stretches/.

n'12 /Greetings and Talks/ In n'12 the /stretches/ are divided into /greetings/ and /talks/.

It is customary for people in Todos Santos who meet and part to greet each other with some standard phrases that are always uttered at a very high pitch. Sometimes they say nothing but those phrases of greeting, and sometimes they proceed to a conversation at normal pitch level after the initial, high-pitched salutations, but then in taking leave they again go up in pitch for the common phrases of farewell.

Thus, there are three kinds of /stretches/, those characterized by high pitch, /greetings/, those not characterized by high pitch, /talks/, and those that are complex, composed of both /greetings/ and /talks/. There is clearly combination between /greetings/ and /talks/, both occur alone. If there were selection between them, they should not be registered in GII, cf. Rés Rg 136 above.

n'12 ?g[~]x+1 :: ?g[~]x+2 :: /greetings and talks/

?g[~]x+2 :: {iβ}

{iB} :: ,?11

{iγ}

{ir}

High pitch is separated out as a signal for /greetings/.

The content section of *n'12 is not carried out.

In n'13, /talks/ and /greetings/ are analyzed into /paragraphs/ signalled by pauses.

v'13 is not carried out.

*n'14, *n'15, and *n'16 are not carried out. They are reserved for, among other things, the registration of /nexias/, but in Mam there is selection between /nexias/, and they can therefore not be registered before *GIII.

/Words/ However, /paragraphs/ can be analyzed further in GII with solidarity as basis of analysis. They are analyzed first into groups of words that are signalled by one primary stress; thereafter the groups of words are analyzed into /words/. /Words/ are signalled by a preceding glottal stop when they begin with a vowel. Thus, for example, nima? 'river' is analyzed as one word as opposed to nim'a? 'much water' that is analyzed into two words: nim a?, and the signal is separated out.

This glottal stop, signal for words, shares certain features with the glottal stop that will be registered in GIII as a pre-taxeme. When the pre-taxeme ? occurs in a position removed from a strongly accented vowel by one of the following pre-taxemes l, w, y, m, or n (and possibly also by a vowel), it is manifested in conjunction with the

strongly accented vowel, for example,

qxá·yaʔ	manifested	]qxa·ʔyə[
koxónaʔ	manifested	]kxoʔnə[
eʔlu·l	manifested	]elʔu·l[

Note: Throughout the paper examples given in actualized notation are enclosed in square brackets, []; ideal notation is unmarked; and manifestation is marked by inverted square brackets,] [.

In actualized notation resolvable syncretisms are unresolved, whereas they are resolved in ideal notation.

The common syncretisms in Mam are: the syncretism of some vowel and zero, ʔ/∅, and i/e/a/o/u. I choose to render the syncretisms i/∅, e/∅, a/∅, o/∅, u/∅, and ʔ/∅ with nothing in actualized notation, except in the few instances in which the discussion is concerned precisely with one or more of these syncretisms, then they are noted as here (i/∅, e/∅, etc.). The syncretism i/e/a/o/u is symbolized by ə in actualized notation and in ideal notation when it is irresolvable.

All quoted utterances that include one or more syncretisms are given in both ideal and actualized notation.

Manifestation is included where ʔ is manifested in a position different from the one it has in actualized notation, and then the latter is omitted. The manifestation of a vowel plus n as a nasalized vowel is not noted specifically anywhere.

Thus for example:

<u>ideal</u>	<u>actualized notation</u>		<u>manifestation</u>
ɛeyep	{ɛyep}	({ɛe/øyep})	()ɛyep()
nɛeeyep	{nɛeeyəp}	({nɛeeyi/e/a/o/up})	()nɛeeyəp()
çʔaxon	{çxon}	({çʔ/øa/øxon})	()çxon()
qʔotəx	{qʔotx}	({qʔotə/øx})	()qʔotx()
qʔinon	({qʔnon}	({qʔi/ønon}))	]qnʔon[

It is quite another matter that the ideal notation used in the expression sections of the operations changes gradually as a result of the analysis, whereas the ideal notation used in the content sections represents the final analysis throughout.

The glottal stop moves towards the accented vowel. The glottal stop that is signal for words behaves in the same way. This is exemplified in certain verb forms.

Most verbal constructions in Mam contain two verbs, one of which is one or a combination from a class of verbs that I call directionals; ma či-kup'-ø n-p'iy-ðʔ]npʔðʔ['I killed them'; ma 'recent past', či 'they/them', kup' 'go down', ø 'non-future', n- 'I/me', p'iy 'kill/hit' ðʔ 'dependent verb form, active'. In this example kup' is the directional verb and p'iy is the other or main verb. Here the directional precedes the main verb, and both have personal formants prefixed to them. In other forms like the non-negated "imperative" and the "infinitive", the directional verb follows the main verb and all personal formants

are prefixed to the main verb, čī-t-on-ə xa·w iʔy čī-y te sux 'help me up! you say to her'; čī 'I/me', t 'non-first person', on 'help', ə 'indicative/imperative, active', xa·w 'go up', iʔy 'pass (from one position to another)', čī 'say', y 'you', te 'to', sux 'she/her'.

When following the main verb, the directional often appears in a slightly different or reduced form,

q'ə xa·w	}	'put it up!'
q'ə wə		
yoʔp'ə xa·w	}	'hang it up!'
yoʔp'ə wə		

The reduced forms at times seem to be suffixes or enclitics rather than separate words. However, in "imperatives" with directionals that begin with a vowel, the glottal stop signalling /words/ is present,

q'ə xa·w	can be manifested	]q'əwə[	'put it up!'
q'ə ok	is manifested	]q'əʔk[	'put it in!'

The glottal stop has moved to the accented ə of q'ə, just as the pre-taxeme ʔ in koxonaʔ moves to the accented o,]kxoʔnə[, and the presence of the glottal stop from ok in]q'əʔk[shows that ok must--also in this construction--be analyzed as a separate /word/. Generalizing from composite imperatives with directionals that begin with a vowel, for example]q'əʔk[, to those with directionals that begin with a consonant, for example]q'əwə[, I analyze all the directionals in the various constructions as /words/.

The directional verbs and their most common reduced forms are:

u·l	'arrive here'
p̃	'arrive there'
ɬa·x, ɬ	'come'
siʔ, s̃	'go'
e·l, e, p'el	'leave, go out'
ok, k	'enter, go in'
xa·w, w(ə)	'go up'
kup', kuʔ	'go down'
a·x	'return'
kax, kx	'remain'
iʔy	'pass'
p'ax	'complete'

The most common combinations of directionals and their manifestations are:

kup' + siʔ	]kuʔs[	'go down there'
kup' + ɬa·x	]kuʔɬ[	'go down here'
xa·w + siʔ	]xas[	'go up there'
xa·w + ɬa·x	]xaɬ[	'go up here'
ok + siʔ	]oks[	'go in there'
ok + ɬa·x	]okɬ[	'go in here'
e·l + siʔ	]es[	'go out there'
e·l + ɬa·x	]eɬ[	'go out here'

The following are some examples of how the "imperatives" composed of a main verb and a directional are mani-

fested,

ɕinə + ɕiʔ	]ɕinəs[	'pull it taut!'
q'ə + ɕiʔ	]q'əs[	'give it! (to a third person away from me)'
xa·sə + ɕa·x	]xa·səɕ[	'whisper it (to me)!'
p'iyə + kup'	]pyʔəkə[	'kill him!'
e·čə + kup'	]e·čəkə[	'measure it!'
q'ə + kup' + ɕiʔ	]q'əkəs[	'put it down there!'
xi·ʂə + ok	]xi·ʂək[	'inject it!'
q'ə + ok + ɕiʔ	]q'əkəs[	'put it in there!'
č'ispū + e·l	]č'ispuʔmə[	'change it!'
su·lə + e·l	]su·ʔlp'əl[	'finish it!'
q'ə + e·l + ɕa·x	]q'oʔməɕ[	'put it down there!'

The sequence of the two verbs in a construction can distinguish a "static" from a "dynamic" action. Thus,

ma č'ī-sq-ū + ok	]č'īsqūʔk[	'I was passively perceiving smells'
ma ɕ'-ok n-sq-ūʔ		'I smelled it'

When analysis with solidarity ceases to give results, then operation series GII is considered exhausted. In the present description I proceed to GIII after the registration of /words/.

*GIII: ANALYSIS OF THE PRE-LINES WITH
SELECTION AS BASIS OF ANALYSIS

I have said that the two undivided pre-lines are the object of analysis in *GIII as in *GII, and that they differ only as to the function taken as basis of analysis. In the first operations of *GII a number of connotators were separated out and chain varieties were recognized as such. In every operation the pre-elements were reduced to variants. In *GIII some additional chain varieties solidary with certain physiognomies will be recognized.

The expression sections of *n1 to *n7 give no yield since the units that would be registered in them if they contracted selection in Mam were registered in *GII.

In the content sections of the same operations, content units of smaller and smaller extent are registered. They are, for example, /stories/ and /chapters/. They are found to appear both as selected and as selecting, i.e. both in {i β } and in {iB}. A chapter will be selecting another chapter, but it will at the same time also be selected by a third. The selection may later be identified as occurring between certain smaller elements entering into the chapters, a "pronoun" presupposing a "noun", for example, or a "definite article" presupposing an "indefinite", etc., but for the time being they give a basis for dividing the /stories/.

No elements may be registered in more than one functional category, and "all pre-elements under mutually different functional categories are subjected to the commutation test," (R  s Rg 64). When pre-elements from different functional categories are found to have mutual substitution, then mapping must be applied. "MAPPING is Reduction by transference from one Functional Category to another." (R  s Df 152). For the present situation the mapping rule found in R  s Rg 57 a) is relevant, "If pre-elements entering into $\{i\beta\}$ have substitution to pre-elements entering into $\{iB\}$, both are assigned to $\{i\gamma\}$." Thus, in the content sections of these operations usually only $\{i\gamma\}$ is realized,

*n8

n8 gives no yield.

y8 $\gamma\gamma \rightleftharpoons 7$:: $\gamma\gamma \rightleftharpoons 8$ = /nexias, pseudonexias/

The elements that are tentatively registered in y8 are found to have substitution to elements of y9 and are therefore according to R  s Rg 34 not to be registered in the present operation, "In each Op, compliance with Pr 3 [the principle of economy] requires that partition [analysis of a process] be permitted only if the resultant parts do not have substitution to parts registered as such in one of the following Opp within the deduction. If this condition is not fulfilled, the entity concerned is to be transferred unanalyzed from the preceding to the current Op as element in the latter."

INFORMAL OUTLINE

At this point I shall insert a very brief and informal presentation of the Mam verb system and sentence structure in order to provide some basis for an easier understanding of the subsequent analysis and of the examples with which this analysis is illustrated.

In the outline I give the examples in ideal notation and segment them according to sign expressions.

Tenses and Personal Formants There are two tenses, 'future' and 'non-future'; 'non-future' combines with various adverbials that specify the time, ma 'recent past', o 'distant past', cin 'simultaneity',

ma čin-čʔax-o-on {čincxon}	'I just washed'
o čin-čʔax-o-on {čincxon}	'I washed (not today)'
cin čin-čʔax-o-on {čincxon}	'I am washing'

The final on in čʔax-o-on {cxon} is formant for 'non-future, active'.

čin-čʔax-o-ol {čincxool}	'I shall wash'
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The final ol is formant for 'future'.

The adverbials ma 'recent past' and o 'distant past' emphasize the factual or punctual aspect of the action, whereas two other adverbials, g 'recent past' and e 'distant past' emphasize the duration of the action or simply

the action itself. Thus, ma ɔ-kim-ɔ n-man 'my father died' (ɔ- 'non-first person, singular', kim 'die', -ɔ 'non-future', n- 'first person, singular', man 'father') is a statement of fact; but g-kim-ɔ n-man 'my father died' is rather the first sentence in my account of how my father died. In other words, skim nman gives the listener reason to believe that a description of the circumstances under which he died will follow.

ɔ 'recent past' and g 'distant past' merge with one set of personal formants. There are two sets of personal formants that in all cases function as prefixes

		<u>set I</u>	<u>set II</u>
singular	first person	n, w	čin
	non-first person	t	ɛʔ, ɛ, ɔ
plural	first person	q	qu, quʔ
	non-first person	k	či, čiʔ

n 'first person, singular' of set I occurs before consonants, and the w occurs before vowels. The distribution of ɛʔ, ɛ, ɔ 'non-first person, singular' of set II is not purely phonetic, but before consonants the variant ɔ is always used. quʔ and čiʔ appear before vowels and qu and či before consonants.

The same sets with ɔ 'recent past' and g 'distant past',

<u>set I</u>		<u>set II</u>	
<u>ɔ-n, ɔ-w</u>	<u>ɛ-n, ɛ-w</u>	<u>šin</u>	<u>en</u>
<u>ɔ-t</u>	<u>ɛ-t</u>	<u>ɛʔ, ɛ, ɔ</u>	<u>ɛ, ɔ</u>

s-q	e-q	squ?,squ	e,Ø
s-k	e-k	š1?,š1	e,Ø

Three of the personal formants of set II disappear completely after e, and even e is lost before verbs that begin with a vowel.

The personal formants of set I are prefixed to nouns to indicate possession,

n-xaa	'my house'
t-xaa n-man	'my father's house' (his house my father)
q-xaa	'our house'
k-xaa	'their house'

A suffix, e, makes 'non-first person' specifically 'second person',

t-man	'his father'
t-man-e	'your (sg) father'
k-man	'their father'
k-man-e	'your (pl) father'

A similar suffix, e?, makes 'first person' specifically 'exclusive',

q-man	'our (incl) father'
q-man-e?	'our (excl) father'

Verb Class I and Verb Class II There are two classes of verbs, class I and class II. All the verbs of class I are intransitive, they never take an object; but I prefer to

simply call them class I verbs because there are also verbs in class II that never take an object and are intransitive. The classification of the verbs into class I and II is based on features of sign expressions; however, the classification is not entirely without relevance in the content. Class I verbs differ from class II verbs in having a ɔ formant for 'non-future' where verbs of class II mostly have a vowel plus n,

class I:

ma č̣i-kim-ɔ	'they died'
ok č̣i-kim-eel [č̣ikmeel]	'they will die'
ma č̣i-ɕʔeʔy-ɔ	'they burnt' (intr)
ok č̣i-ɕʔeʔy-el	'they will burn' (intr)
ma č̣i-sas-pʔe-ɔ	'they became thin'
ok č̣i-sas-pʔe-seel	'they will become thin'
ma č̣i-puus-əs-ɔ	'they became moldy'
ok č̣i-puus-əs-eel	'they will become moldy'
ma č̣i-sik-t-ɔ	'they became tired'
ok č̣i-sik-t-eel	'they will become tired'

-pʔe-, -əs-, and -t- are derivational suffixes.

Class II:

ma č̣i-ɕʔax-o-on [č̣iɕxon]	'they washed' (tr)
ok č̣i-ɕʔax-o-ol [č̣iɕxool]	'they will wash' (tr)
ma č̣i-čʔaapʔ-en	'they yawned'
ok č̣i-čʔaapʔ-el	'they will yawn'
ma č̣i-ɕol-pʔa-an [č̣iɕolpʔan]	'they put it in a line'
ok č̣i-ɕol-pʔa-al	'they will put it in a line'
ma č̣i-ɕʔom-sa-an [č̣iɕʔomsan]	'they made it sour'
ok č̣i-ɕʔom-sa-al	'they will make it sour'

-p'a- and -sa- are derivational suffixes.

Transitivity Most verbs of class II have at least two different forms that can appear with formants for 'future' and 'non-future':

ma či-čʔax-o-on	{čičxon}	'they washed (it)'
ok či-čʔax-o-ol	{čičxool}	'they will wash (it)'
ma k-čʔax-ø		'they washed it'
ok k-čʔax-aʔ	{kčxaʔ}	'they will wash it'

The difference between the two pairs may be said to be in degree of transitivity. The form of the first two, ma či-čʔax-o-on {čičxon} and ok či-čʔax-o-ol {čičxool}, i.e. čʔax-o, can be followed by an object, ma ø-čʔax-o-on {cxon} mes 'she washed a table', but no object has to be specified; it appears to be optionally transitive. The latter two, ma k-čʔax-ø and ok k-čʔax-aʔ {kčxaʔ} must have an object; they can be said to be obligatorily transitive. These forms are not recognized by their transitivity, they are distinguished by their root form and the formants for 'future' and 'non-future'. Based on the observation that a certain aspectual difference accompanies the difference in transitivity and because some of the verbs that have only the "optionally transitive" form are in fact intransitive, I prefer the terms completive for the obligatorily transitive form--čʔax-- and neutral for the optionally transitive form--čʔax-o {cxo}.

Both the completive and the neutral form can be elici-

ted for almost all verbs of class II. But the completive form is rarely used.

A few verbs occur only in the neutral form, and they are all intransitive, for example:

ma či-čʔaapʔ-en	'they yawned'
ma či-kʔoʔ-on [čikʔoʔn]	'they crawled'
ma či-lip-en	'they jumped'

An even smaller number of verbs that are all transitive occur only in the completive form:

k-ax-Ø xun xaa-ʔ	'they want a house'
k-kʔil-Ø xun xaa-ʔ	'they do not want a house'
ma k-il-Ø xun xaa-ʔ	'they saw a house'
ok k-il-aʔ [kilaʔ] n-man	'they will see my father'
pʔaʔn ma n-see-Ø w-aaqʔun	'I did my work well'
pʔaʔn n-see-ʔ w-aaqʔun	'I shall do my work well'

xun	'one, a'
xaa-ʔ	'house'
pʔaʔn	'good, well'
w-aaqʔun	'my work'

Two formants for 'person' can be prefixed to the completive forms: the one farthest from the verb referring to the object, and the one closest to the verb referring to the subject.

ma čin-t-il-Ø	'he saw me'
ok qu-k-pʔiy-aʔ [qukpyʔaʔ]	'they will kill us'

whereas the neutral forms allow only one personal formant to

be prefixed, namely that of the subject,

ma č̣i-č̣ok-o-on {č̣içkon} w-iʔx 'they called me'

č̣ok-o-ol 'to call'
-iʔx 'at'

When used with the object, -iʔx also indicates 'definite':

ma č̣i-č̣ʔax-o-on {č̣içxon} mes 'they washed a table'

ma č̣i-č̣ʔax-o-on {č̣içxon} 'they washed the table'
t-iʔx mes

The most common passive cannot be said to be more closely connected with either the neutral or the completive.

ma č̣i-č̣ʔax-o-eet {č̣içxet} 'they were washed'

ok č̣i-č̣ʔax-o-eet-el {č̣içxetəl} 'they will be washed'

In addition to the completive and the neutral forms, some verbs have a third form. It is intransitive, and I call it the incompletive form. It is not found for all the verbs of class II, and it is rarely used.

Incompletive:

ma č̣in-č̣ʔaax-en 'I washed' (intr)

ok č̣in-č̣ʔaax-el 'I shall wash' (intr)

ma č̣in-saax-en {č̣insaaan} 'I kicked (made kicking movements in the air)'

Neutral:

ma č̣in-sax-o-on {č̣insxon} 'I kicked (him)'

When the infinitive, i.e. the form found after the verb 'begin' and after 'go (to do)', does not have an object, it is identical with the future form of the neutral, but when it has an object, it differs from the future form by having no vowel,

ok čī-čʔax-o-ol {čīčxool}	'they will wash'
ma čeʔs čʔax-o-ol {čxool}	'they went to wash'
ok čī-čʔax-o-ol {čīčxool}	'they will wash their
k-an	skirts'
ma čeʔs čʔax-o-l {čxol}	'they went to wash their
k-an	skirts'
čīn-kʔey-el	'I shall sell'
ma čīs kʔey-el	'I go to sell'
čīn-kʔey-el is	'I shall sell potatoes'
ma čīs kʔey-l is	'I go to sell potatoes'
k-an	'their skirts'
is	'potatoes'

čeʔs is 'non-first person, plural, non-future' of the verb siʔ 'to go' with which the personal formants merge in the non-future.

čīs	'I go'	čīn-seʔl	'I shall go'
čiʔ	'he goes'	Ø-seʔl	'he will go'
qoʔs	'we go'	qu-seʔl	'we shall go'
čeʔs	'they go'	či-seʔl	'they will go'

The verb forms so far mentioned are:

class I

<u>non-future</u>	cʔeʔy-Ø
<u>future</u>	cʔeʔy-əl
<u>infinitive</u>	cʔeʔy-əl

class II

	<u>completive</u>	<u>neutral</u>	<u>incompletive</u>
<u>non-future</u>	cʔax-Ø	cʔax-o-on [cxon]	cʔaax-ən [cʔaaan]
<u>future</u>	cʔax-aʔ [cxaʔ]	cʔax-o-ol [cxool]	cʔaax-əl [cʔaaan]
<u>passive: non-fut.</u>	cʔax-o-eet	[cxet]	
<u>fut.</u>	cʔax-o-eet-əl	[cxetəl]	
<u>inf: intr.</u>	cʔax-o-ol	[cxool]	
<u>tr.</u>	cʔax-o-l	[cxol]	

Constructions with directionals More common than any of the simple verb forms that I have so far presented are constructions with two verbs, one of which is a directional. I have already briefly touched upon these constructions, p. 58ff, and I have listed the twelve directional verbs, which form a subgroup within verb class I. It is significant whether the directional appears as the first or as the second of the two verbs in a construction since both possibilities exist. The sequence main verb - directional verb is "marked", so in order to provide a background for its markedness I shall discuss the other, "unmarked" sequence first.

Constructions with directionals can be either transi-

tive, intransitive, or passive according to the number of complements and the form of the main verb. The main verb can be from either class I or class II.

ma čī-kupʔ-Ø t-pʔiy-o-oʔn	'he killed them'
]tpyʔoʔn[	
čī-kupʔ-eel {čīkpʔeel}	'he will kill them'
t-pʔiy-o-oʔn]tpyʔoʔn[	

Literally those sentences mean 'recent past; they, go down, non-future; he, kill' and 'they, go down, future; he, kill'. I call them transitive because they have two complements, one, čī 'they', more closely connected with the directional, the other, t 'he', more closely connected with the main verb.

Made passive, the sentences are:

ma čī-kupʔ-Ø pʔiy-o-eet	'they were killed (by him)'
]pyʔet[(t-uʔn)	
čī-kupʔ-eel {čīkpʔeel}	'they will be killed
pʔiy-o-eet]pyʔet[(t-uʔn)	(by him)'

The form of the main verb changes from pʔiy-oʔn, which is a participial-like dependent verb form, to the simple passive form. No complement is directly connected with it, but tuʔn 'his doing' can be added. The formant for tense always accompanies the directional verb, whereas it is seen from the main verb whether the construction is to be considered active or passive or intransitive,

ma čī-xaaw-Ø lip-en	'they jumped (up)'
čī-xaaw-el lip-en	'they will jump (up)'

Literally, 'recent past; they, go up, non-future; jump' and 'they, go up, future; jump'.

No complement is connected with the main verb, and it is not in the passive form so I call the construction intransitive.

The following are examples of similar intransitive constructions but with class I verbs as main verbs.

ma čiʔ-eel-Ø oq	'they fled' (they left flee)
ma ɬʔ-eel-Ø aʔ-yəs	'it melted' (it left become water)
či-kupʔ-eel {čikpʔeel} koos-əs	'they will become limping' (they will go down limping)
Ø-xaaw-el qʔax-t	'it will be audible' (it will go up become heard)

Verb class I has a second, quite numerous subgroup of verbs that I call positionals. Positionals are intransitive, derived verbs that very specifically describe in which way someone or something sits, lies, or stands. Their derivational suffix is -ee.

ma či-kupʔ-Ø qʔuup-ee {qʔupe}	'they lay down like fat pigs'
ma či-kupʔ-Ø šliiq-ee {šliqe}	'they stood with pricked- up ears'
čin-kupʔ-el {činkpʔel} čoot-ee {čote}	'I shall sit down being/ as a fat person'

The reverse order of the two verbs, namely main verb -

directional verb, is used primarily for two purposes, first to distinguish imperative from indicative, cf. p 58ff, and secondly to distinguish position or static from motion or dynamic.

Indicative:

čín-kupʔ-eel	{čínkupʔeel}	'you will kill me'
t-pʔiy-o-oʔn-e	]tpyʔoʔne[	

Imperative:

čín-t-pʔiy-o-on kupʔ	'kill (sg) me!'
]čintpyʔonke[	

I have given a few examples of the static versus dynamic distinction with verbs of senses on p. 61. However, it is used primarily with positionals.

Verbs of senses:

dynamic	ma čín-ok-Ø ip-ən t-iʔx-e	'I touched you (on purpose)'
static	ma čín-ip-ən ok]činipən[t-iʔx-e	'I touched you (accidentally)'
dynamic	ma Ø-kupʔ-Ø siʔ]kuʔs[n-əpʔi-ʔn]npʔiʔn[	'I heard it (actively)'
static	ma čín-əpʔi-n kupʔ siʔ]činəpʔinkəs[	'I heard it (passively)'

Positionals:

motion	ma čín-kupʔ-Ø qʔuq-ee]qe[	'I sat down'
position	qʔuq-l kupʔ]qʔuqlke[qen	'I was sitting down'
	čoot-l kupʔ]čotlke[xil	'it was lying like a pig'

koʔ-l eel siʔ
]koʔlpʔes[cin

'she is lying out there'

This construction with positionals differs from other constructions so far presented by not allowing any personal prefixes. Instead, the verb cluster is followed by a form of a verb 'tə be'. The two forms occurring here are gen 'I am' and Ø 'he/she/it is'.

cin means 'girl'; it is one of five very frequent words that are used to identify a "third" person more specifically. The other four are sin 'grown man', sux 'grown woman', qʔaa 'boy', and xil 'animal'.

t-man sin	'his (man's) father'
t-man sux	'her (woman's) father'
t-man qʔaa	'his (boy's) father'
t-man cin	'her (girl's) father'
t-man xil	'its (animal's) father'

A third and very rarely used construction with the sequence main verb - directional verb is found with the future form of the completive. Its meaning differs considerably according to the grammatical person connected with it. In 'non-first person' it is used as a strict command, but in the 'first person' it is rather a polite request, "let me do ..." or "I'll do ..."

Ø-cʔax-aʔ xaaw ʔaax]cʔaxʔwəʔ[	'go wash it now!'
ok n-cʔax-aʔ xaaw ʔaax]ncʔaxʔwəʔ[	'let me wash it'

'to be' and Personal Pronouns Almost as common as sentences with two verbs are sentences with no verb at all. It is the 'non-first person' of 'to be' which is left out. There are two verbs that translate into English 'be':

- | | |
|-------------|------------|
| 1. ntiʔn(ə) | 'I am' |
| taʔ | 'he is' |
| (i)toʔ | 'we are' |
| (i)teʔ | 'they are' |

This verb is used only about being in some place, nagč ntiʔn 'I am far away'; it can be combined with directionals, itoʔ xaaw siʔ]ətoʔwəʃ['we are up there'. However, the regular forms ten and tem-el (future) with the same meaning and the "impersonal" form at 'there is' are more common.

- | | |
|--------|------------|
| 2. qen | 'I am' |
| te, ø | 'he is' |
| qoʔ | 'we are' |
| qke, ø | 'they are' |

This verb is used with adjectives, nouns, postionals, and the verb forms with ə 'distant past' that are ambiguous as to 'person',

- | | |
|---------------------------|-----------------------|
| qʔinen qen | 'I am rich' |
| čoʔt qen | 'I am fat' |
| yaapʔ qen | 'I am sick' |
| suuʔx qen | 'I am a woman' |
| 17 qen | 'I am 17 (years old)' |
| peeyre qen | 'I am Pedro' |
| qʔuq-1 kupʔ]qʔuqlkə[qen | 'I am sitting down' |

en-čʔaxo-on	{enčxon}	(qen)	'I was washing' (tr)
e-čʔax-o-on	{ečxon}	te-y	'you (sg) were washing'
e-čʔax-o-on	{ečxon}	(te) sux	'she was washing'
e-čʔax-o-on	{ečxon}	qoʔ	'we were washing'
e-čʔax-o-on	{ečxon}	qke-y	'you (pl) were washing'
e-čʔax-o-on	{ečxon}	(qke) sux	'they were washing'

The most frequent occurrence of qen is after lu 'here,

lu qen čin čin-čʔax-o-on-aʔ 'here I am, I am washing'
]čincxoʔnə[

This is a common sentence type that must be analyzed as being composed of two clauses. Most occurrences are in the "third" person and are without a verb

lu čin č-čʔax-o-on-aʔ	'here she is, she is
]čxoʔnə[	washing'

A number of adverbials must be interpreted analogously as separate clauses,

xyaʔ-s t-uul-č sin	'early he came'
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A conjunction, tex 'when', can here be encatalyzed,

xyaʔ-s tex t-uul-č sin	'(it was) early when he came'
------------------------	-------------------------------

<u>but</u> : č-uul-č sin xyaʔ-s	'he came early'
---------------------------------	-----------------

The mostly absent form for 'non-first person, singular', te, appears to be borrowed from one of two pronominal series: one of independent personal pronouns,

na'yen	'I'
xaa	'he, she, it'
xoo'	'we'
xee'	'they'

and one of set I personal prefixes attached to an element ee that either serves as emphasis or indicates possession,

ma čin-č'ax-o-on {čincxon}	wee	' <u>I</u> washed'
ma Ø-č'ax-o-on {cxon}	tee sux	' <u>she</u> washed'
ma qu-č'ax-o-on {qucxon}	qee	' <u>we</u> washed'
ma či-č'ax-o-on {čicxon}	kee sux	' <u>they</u> washed'
n-p'ii	wee	' <u>my</u> name'
t-p'ii	tee sin	' <u>his</u> name'
q-p'ii	qee	' <u>our</u> name'
k-p'ii	kee sin	' <u>their</u> names'
wee	wee-y	'it is mine'
tee	tee sin	'it is his'
qee	qee	'it is ours'
kee	kee	'it is theirs'

However, I do not consider -ee a verb, first because I would then have to recognize a great number of very short embedded sentences, and secondly because it behaves as an adjective or noun in the following connection:

tee-y qen	'I am yours'
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In sentences of the type wee 'it is mine', the verbal form--usually zero--is 'non-first person, singular' of qen.

*GIII (continued)*n9

n9 ?g $\overset{\rightarrow}{\leftarrow}$ 8 :: ?g $\overset{\rightarrow}{\leftarrow}$ 9 = /nexus/

 ?g $\overset{\rightarrow}{\leftarrow}$ 9 :: {;θ} :: n711

 {;B} :: n711

 {;γ}

 {;r}

Units of selection pre-glossemes are analyzed into the four functional categories. Only {;θ}--defined as "appearing only as determined"--and {;B}--defined as "appearing only as determining", (RéS Rg 31 2°)--are realized and they are both analyzed into an unrestricted number of pre-elements.

The pre-elements here registered are operatively called /nexus/. I present the following examples as unbroken expression chains because they should be imagined as unanalyzed expression units defined solely through the selection that divides them into two categories.

\ nuqexa.wq'aq'ti?xxa.?

'a fire just broke out
in the house'

\ xūni?k'wa.loksq'onteq'aq'tux-
ni?so.x

'a small boy set fire to
some hay'

/ ep'axti?xxa.?'e.we → \ tok-
qke?yene

'we saw something happen
to a house yesterday'

/yakeʒno·xsxa·lxaʔləwə yameʒʔlutlq'aq'nnak'ək'antl- peʔnə	'now when people saw it' 'there was already fire crackling outside'
---	---

The first two examples are of pre-elements from the functional category {iβ} and in both of the two last examples the first pre-element is from functional category {iB} and the second pre-element is from {iβ}.

The arrow between the two pre-elements of the last examples can be misleading; the selection does not take place between the individual pre-elements: /ep'axtiʔxxa.ʔ-e.wə does not select specifically tokqkeʔyənə. The selection takes place between the two categories of pre-elements. This is not peculiar to the selection between nexus; all relations occur between categories.

Since the inventories of the two realized functional categories are unrestricted, they do not have to be subjected to free analysis.

According to Rés Rg 108, a certain test must here be applied, "In each of the Opp *GIII ff.; *GIII ff., etc. until further determination to the contrary, a check is made to discover whether all highest-degree elements can each alone constitute a catalyzed upper chain.

In the first Op of an Op-series where this test has negative results, the upper chains are called lexias,". The elements of the operation in which the test has negative results are called lexemes, they are defined as "Parts of Lexias", (Rés Df 193).

Not all pre-elements of n9 can constitute a catalyzed

("complete") upper chain so, in accordance with Rg 108, the pre-elements of the present operation are registered as lexemes.

29 ?Y $\rightarrow$ 8 :: ?Y $\rightarrow$ 9 - /nexus/, /pseudonexus/

 ?Y $\rightarrow$ 9 :: {iB} :: n?11

 {B} :: n?11

 {Y}

 {r} :: n?11

In order to explain what happens in this operation I must first pretend that operation 28 gave yield and that the functival category {iY} was analyzed into pre-elements operatively called nexias. These units are then in the present operation tentatively analyzed into /nexus/, of which there are registered two categories, a selected category and a selecting category, as indicated above, {iB} :: n?11 and {B} :: n?11. Thus the nexia,

1. e-p²ax-Ø t-i²x xaa-² eewə
t-ok q-ke²y-e-²-n-e²

'something happened to a
house yesterday, we
were watching'

is analyzed into two /nexus/, one from the category of selected /nexus/,

e-p²ax-Ø t-i²x xaa-² eewə

'something happened to a
house yesterday'

and the other from the category of selecting /nexus/,

t-ok q-ke²y-e-²-n-e²

'we were watching'

pʔax	'complete'
xaa-ʔ	'house'
eewə	'yesterday'
keʔy-əl	'to see'

Note: I cannot adequately give examples of content units, particularly not of units that are as complex as nexias and nexus. Presenting them as expression units that are divided into words, as I have done above, may give the impression that there is perfect correspondence between the two planes, which is obviously not the case. It might therefore be more appropriate not to give the examples in Mam at all, but rather to present a literal translation of the sign contents in the order in which they occur. This would no doubt make it easier to avoid looking at the units as expression units, but it would probably make it almost impossible to read the examples, and English translations would still be necessary. Instead I continue to use the Mam sign expressions as a simpler way of representing the sign contents--ma is shorthand for 'recent past', etc.--with the added warning, however, that the sign expressions and the sign contents are not the objects of the analysis. I use ideal notation and I separate the signs with hyphens.

The nexias,

2. pʔisen ox ɕun ɕin ɕ-ɕqiiɕ-ɕ 'and then when it [corn]
 pʔisen ɕin ɕ-ɕpʔ-ɕ ɕaax]kuʔɕ[is then dry, then we take
 q-iqʔii-ʔ-n]qiiʔn[te q-waa it down for our tortillas'

3. ox ϕ un ϕ in ϕ -kup ϕ - ϕ ϕ aax 'then when we take it
]ku ϕ [q-iq ϕ ii- ϕ -n]qii ϕ n[[corn] down for our tor-
 te q-waa p ϕ is ϕ n ϕ in ϕ -kup ϕ - ϕ tillas, then we cook it
 si ϕ]ku ϕ s[q- ϕ ik-o- ϕ -n]q ϕ ko ϕ n[in a pot'
 t-ux xun uk ϕ il

p ϕ is ϕ n	'then
ϕ un	'then
ϕ qii ϕ x	'dry'
q-waa	'our tortillas'
ox	'whenever'
iq ϕ i-l {q ϕ il}	'to bring something'
ϕ ik-o-ol { ϕ ko ϕ l}	'to fry'
t-ux	'in it'
xun	'one, a'
uk ϕ il	'cooking pot'

are analyzed into a selecting and a selected nexus,

p ϕ is ϕ n ox ϕ un ϕ in	→	p ϕ is ϕ n ϕ in ϕ -kup ϕ - ϕ ϕ aax
ϕ - ϕ qii ϕ x- ϕ		]ku ϕ [q-iq ϕ ii- ϕ -n]qii ϕ n[
		te q-waa
ox ϕ un ϕ in ϕ -kup ϕ - ϕ	→	p ϕ is ϕ n ϕ in ϕ -kup ϕ - ϕ si ϕ
ϕ aax]ku ϕ [q-iq ϕ ii- ϕ -n		]ku ϕ s[q- ϕ ik-o- ϕ -n {q ϕ ko ϕ n}
]qii ϕ n[te q-waa		t-ux xun uk ϕ il

The nexia

4. nuq e-xaaw- ϕ q ϕ aq ϕ t-i ϕ x 'fire just ascended from
 xaa- ϕ the house'

is analyzed into one selected nexus.

All the nexias are analyzed in this manner, and the elements of the two functival categories are registered. In compliance with Rés Rg 64 "All pre-elements under mutually different functival categories are subjected to the

commutation test ..." these elements must be checked for commutation. In doing this, I find that when I remove, for example pʔisən 'and then' from the selected nexus of example 2, and ox ɣun 'then when' from the selecting nexus of example 3., then there is substitution between the two. pʔisən and ox ɣun are conjunctions, and by removing conjunctions in general, I find that any element from the selecting category can be shown to have substitution to some element from the selected category; and any selected nexus can be shown to have substitution to a selecting nexus.

The conjunctions, which I remove, are identified as connectives according to Rés Df 151, "A CONNECTIVE (symbol: *X) is a Punctive that under certain conditions is Solidary with Complex Units of a certain Degree."

The fact that connectives are defined by being solidary with the complex units means in this case that there must be conjunctions between the nexus of all nexias. There is no conjunction present in example 1., but the nexia is catalyzed:

e-pʔax-Ø t-iʔx xaa-ʔ eewe
/tex/ t-ok-Ø q-keʔy-e-ʔn-əʔ

'something happened to a
house yesterday when we
were watching'

and conjunctions can be encatalyzed in all nexias.

In agreement with the mapping rule found in Rés Rg 57a), "If pre-elements entering into {iβ} have substitution to pre-elements entering into {iB}, both are assigned to {iγ}." only {iγ} is realized in the present operation, and {iβ} and {iB} are virtual.

It is due to Rés Rg 34 that nexias were not to be registered in operation γ8--Rg 34 was quoted on p. 63--and according to Rés Rg 54, they are registered and immediately analyzed further in the present operation. Rg 54 reads, "Pre-elements which, on application of Pr 5 [the principle of generalization], can be univocally registered as complex units containing only elements under one or more of the functival categories registered in *GXx.2 [analysis of the functional category into functival categories] must not be registered as elements in any of these categories. Connectives are separated out from the units,...".

All the nexus registered "can constitute a catalyzed upper chain", so the elements arrived at in γ9 are not lexemes.

In the discussion of γ9 in Rés there is a very suggestive comment, Rés p. 193, "If they ["nexal infinita"] cannot be registered at any later stage of the procedure, they are registered in γ9 as {iB}. This will be true of all chains including a part that can be univocally identified as an extense characteristic. This will be the case, for example, when an "infinitive" indisputably includes fundamental extense morphemes. But such a case occurs very rarely."

This suggests that Mam constructions with directionals should possibly be analyzed as two nexus.

ma či-kup?-ø t-pʔiy-o-ʔ-n 'he killed them'
]tpyʔoʔn[

would be analyzed into ma či-kup?-ø and t-pʔiy-o-ʔ-n]tpyʔoʔn[.

selecting nexus could thus not be reduced pairwise to variants; v⁸ would be realized, since nexias would be registered as elements of {iy} in that operation; and nexus would be identified as lexemes and nexias as lexias.

Conjunctions Certain kinds of units appear to be simplex, and yet they have to be analyzed into two nexus. Typically they are composed of an "action" and an indication of time or place which must be analyzed as a separate nexus if it appears before the "action". The verb in the time or place nexus is generally 'non-first person' of the verb 'to be' (qen), manifested by zero. If the "action" precedes the time or place indication, they form just one nexus. When the first nexus is an indication of time, the conjunctions that serve as connectives are ox 'when (fut)', 'whenever' and tex 'when (past)':

kaap ² t-axl-aal maaye <u>ox</u> t-uul-Ø sin	'on May second he will come'
čil kə q ² iix <u>ox</u> sin Ø-uul-Ø sin waa ² -l	'he comes to eat at noon (every day)'
xya ² -s (<u>tex</u>) s-Ø-uul-Ø]suul[sin	'it was early when he came (today)'
xya ² -s (<u>tex</u>) t-uul-Ø sin	'it was early when he came (not today)'

but:

ok Ø-uul-əl sin kaap ² t-axl-aal maaye	'he will come on May second'
s-Ø-uul-Ø]suul[sin xya ² -s	'he came early (today)'
Ø-uul-Ø sin xya ² -s	'he came early (not today)'

kaapʔə	'two'
maayə	'May'
t-axl-aal	'date'
čil kə qʔiix	'at noon'
waaʔ-l	'to eat something'
xyaʔ-s	'early'

The change from t-uul-Ø 'he came' to Ø-uul-Ø 'he came' in the last example is a matter of sign expressions and not relevant here.

Whereas I have encountered no examples with a verb in the 'first person' in nexus indicating time, it is not quite so rare in nexus indicating place:

lu qen čin čin-čʔax-o-on-aʔ	'here I am washing my
]čincxoʔnə[w-an	skirt'

lu	'here'
w-an	'my skirt'

The expression for the conjunction that connects this type of complex unit containing a "place nexus" is an -aʔ, suffixed most commonly to the verb; it has two other variants: pʔə after a vowel, and wə after a vowel plus glottal stop. Some examples are:

lu čin Ø-q-o-on aʔ-wə	'here he is pouring water'
xaaʔ ma čiʔ-aʔ-y]čaʔy[	'where are you going?'
t-ux niʔ soox Ø-ok-Ø siʔ-aʔ	'it was to some hay that
]okse[t-aqʔ-o-ʔn {tqʔoʔn}	a little boy set fire'
xun niʔ kʔwaal qʔaqʔ	
t-uʔn sin s-č-uul-Ø-aʔ	'it was with/by him that
]suuʔle[siiʔ	the firewood came' (he brought the firewood)

maaxe [maaa] xčis ma 'it was all the way there
 Ø-kim-Ø-a? [kma?] sin that he died'

enteere ma či-kim-Ø-a? [čikma?] 'everywhere they died'

but:

entere ma či-kim-Ø 'everybody died'

xte? s-kax-Ø-a? [skxa?] 'how much was it that
 t-čii?l-e your basket left?' (how
 much did you pay for it)

xte? ma Ø-uul-Ø-a?]suu?le['for how much was it that
 sin čnap?xel he came from Huehue-
 tenango?'

q-o-ol	'to pour'	t-u?n	'his doing'
a?	'water'	sii?	'firewood'
xaa?	'where?'	maaxe [maaa]	'all the way'
t-ux	'in it'	xčis	'there'
ni?	'some, little'	xte?	'how much?'
k?waal	'boy'	kax	'remain'
q?aq?	'fire'	čii?l	'basket'
soox	'hay'	čnap?xel	'Huehuetenango'

Some of the same utterances with the place indication following the "action" are given below. They have no connective a? and constitute one nexus.

Ø-ok-Ø si?]oks[t-aq?-o-?n 'a small boy set fire to
 [tq?o?n] xun ni? k?waal some hay'
 q?aq? t-ux ni? soox

s-Ø-uul-Ø]suul[sii? t-u?n 'the firewood came with
 sin him'

xte? constitutes a separate nexus only when it is about price; compare the following nexus in which xte? does not indicate price and in which there is no a?:

xte? s-kax-Ø t-iq?-i-?n-e 'how many did you take?'
]tli?nə[

In addition to the a? which is expression for a connective, there is at least one other suffix (and possibly two) of the shape a?, but with different contents. One case of a?, which is expression for a demonstrative unit, is easily distinguished from the connective both through its phonological properties and through its relations: it appears to select a demonstrative unit xa:

t-ux xa sxaaw o Ø-p?ax-Ø-a? 'in the month that was
 completed' (last month)
 xaa? o Ø-p?ax-Ø-a? {pxa?} 'where did he die?'

sxaaw 'month'
 p?ax 'complete, die'

The suffix a? for 'demonstrative' does not cause the short root vowel of p?ax to drop as does the a? which is a connective.

The 'demonstrative' also occurs in connection with ma 'whether', 'or':

ma fun xaas-a? ma fun min-a? 'be it true or not'
]mi?nə[

xaas 'certain, true' min 'not, no'

In some of the following examples an a? or p?ə seems to mean 'in spite of (efforts)', but I have so far been unable to determine whether it should be identified with the connective or not, and therefore I leave it unanalyzed for

the time being.

min en-skee-Ø-pʔə	'I did not manage in spite of trying hard'
min en-skee-Ø	'I did not manage (but did not try)'
min Ø-uul-Ø-aʔ]uuʔlə[sin	'he did not come, but was expected to'
min Ø-uul-Ø sin	'he did not come'
min e-w-il-Ø-aʔ]ewiʔlə[	'I could not see it'
min e-w-il-Ø	'I did not see it'
pʔax-s Ø-kax-Ø-aʔ {-kxaʔ}- sin lkalt	'he has never been mayor'
čʔi-s ke mə s-pʔax-Ø-aʔ {spxaʔ}- sin	'he almost died'
skee 'manage, endure'	lkalt 'mayor'
il 'see'	čʔi-s ke mə 'nearly'
pʔax-s 'never'	

After xuʔ 'thus' an aʔ may occur suffixed to almost every word in the sentence:

<u>xuʔ</u> sun s-Ø-uul-Ø-aʔ]suuʔlə[	'that is how this corn
t-siiʔn-aʔ kiw-s-aʔ t-ux	was brought quickly
t-xaa dyos-aʔ	to the church'
t-siiʔn	'his corn'
kiw-s	'quick(ly), hard'
t-ux	'in it'
t-xaa dyos	'church (God's house)'

The conjunctions registered as connectives in the present operation are units of four types:

1°. Units that are found in later operations to have substitution to units that are not connectives: tuʔn, xuʔ, qa.

tuʔn with connective function:

ma čis <u>tuʔn</u> t-paas-ø t-wiç	'I went <u>to</u> change it [a one quetzal bill]'
siʔ t-qpʔ-a-ʔn <u>tuʔn</u> n-siʔ	'he told me <u>to</u> go to
kox-o-ol {-kxool}	work in the field'
paas	'be broken'
t-wiç	'its surface'
qpʔ-a-al	'to tell, say'
kox-o-ol {-kxool}	'to work the land'

tuʔn without connective function:

min s-ç-uul-ø]suul[<u>t-uʔn</u>	'he did not come <u>because</u>
ninqʔiix	<u>of</u> the fiesta' (he dislikes fiestas'
ma ø-kupʔ-ø siʔ]kuʔs[	'I cut my hand <u>with</u> a
n-çʔom-e-ʔn <u>t-uʔn</u> kčiił	knife'
ninqʔiix	'fiesta' (great day)
çʔom-el	'to cut'
kčiił	'knife'
t-uʔn	'his/its doing, because of him/it'

xuʔ with connective function:

xun-tł çun qʔiix çiʔ	'then some other day they		
k-keʔy-e-ʔn <u>xuʔ</u> çaaax-nin	saw <u>that/how</u> their mother		
t-çaaax k-çuu-waʔ	was coming'		
-tl	'again'	qʔiix	'day'
xun	'one, a'	nin	'"progressively"'

keʔy-əl 'to see'
 -cuu 'mother'
 -waʔ

xuʔ without connective function:

xuʔ ʔun-aʔ]ʔuʔne['that is it'
xuʔ-s 'equal'
 ʕi ʔun k-xuʔ-waʔ '"that is how it is told"'
 -s 'still'
 ʕi 'say'

qa with connective function:

min tiʔ tuʔmɛl qa ʔ-uul-ʔ 'it is not known whether
 ʕin pʔis qa min /ʔ-uul-ʔ/ he will come or not
 (come)'

o n-epʔii-ʔ {npʔii} qa o 'I heard that his father
 ʔ-kim-ʔ t-man ʕin died'

qa ma ʕiʔ q-aqʔ-o-ʔn]qqʔoʔn['if we put straw on it
 ʕʔum t-wiʔ ok ʔ-iʔy-əl xpʔaal [roof], the rain will
 t-ux go through'

min tiʔ	'there is not'	aqʔ-o-ol {qʔool}	'to put'
tuʔmɛl	'idea, thought'	ʕʔum	'straw'
pʔis	'and'	t-wiʔ	'its top'
epʔi-il	'to hear'	xpʔaal	'rain'
kim	'die'	t-ux	'in it'

qa without connective function:

qa pɛ ʔ-uul-ʔ ʕin 'he will probably come'
 pɛ '"question"'

2°. Connectives that in later operations are found to

have substitution to units with connective function in respect of other complex units, pʔis, ma:

min tiʔ tuʔmɛl qa ɛ-uul-ø
 sɪn pʔis qa min /ɛ-uul-ø/
 is pʔis xun iʔɛ

'it is not known whether
 he will come or not'

'potatoes and a fresh ear
 of corn'

ma ɕis ɕʔax-o-ol [ɕxool]
pʔis ɕiyaʔy-əl

'I went to wash and to
 carry water'

at oose t-qʔapʔ kaapʔe te
 t-wiʔ pʔis xun te t-qen

'it has three hands, two
 at the front and one as
 a leg

iʔɛ	'fresh corn'	te	'for, as'
oose	'three'	t-qen	'its leg'
t-qʔapʔ	'its hand'	kaapʔe	'two'
is	'potato'		

tiʔ lo ma ɕun mi-s pʔaʔn
 ɕi-pʔinɕa-an pwaq ma ɕun
 ke ɕi-pʔinɕa-an pwaq-aʔ

'I wonder whether they
 cannot produce money or
whether they know how
 to make money'

tiʔ t-ok-ø t-uʔn doktor ok
 ø-pʔe-t-əl pə-y ma min-x

'what did the doctor say,
 will you be able to
 walk or not

pin pə ma slooʔ-x

'is it thick or thin?'

tiʔ	'what'	tiʔ tok tuʔn	'what did he say?'
lo	'probably'	pʔe-t-əl	'to walk'
mi-s	'not'	pə	'"question"'
pʔaʔn	'can'	pin	'thick'
pʔinɕa-al	'to make'	slooʔ	'thin'
pwaq	'money'		

3°. Conjunctions that appear only in the present opera-

tion as connectives, kome, entonse, xookʔe, tips, ame (-t), tex, ox, ɕun, pʔisən, aʔ (aʔ was discussed p 89ff):

ɕin ɕi-eel-ø sin loqʔ-o-l
[lqʔol] kandeele entonse
ɕin ø-aqʔ-ø-tl ɕun sin
ɕman-pʔex aqʔun-a-al

ok ø-seʔl ɕnapʔxəl kome
ø-yaapʔ-t-ø

xookʔe ɕin ø-eel-ø siʔ-e
]esə[lu qen ɕin ɕin-pon-ø-aʔ

tips ɕiʔ t-qilt-a-ʔn xil-aʔ
]xiʔlə[ma tips øʔ-ok-ø
t-yuuk-a-ʔn xil-aʔ]xiʔlə[
min ø-xaaw-ø tʔik-pʔex xil

ame mi-s pʔaʔn-t ø-wkʔa-n-e
qʔeʔn pere ø-pon-ø xun tyem
ok ø-seʔl t-uʔn-e

ame ø-uul-ø xpʔaal pere iil
t-iʔx ma ɕis

e-pʔax-ø t-iʔx xaa-ʔ eewe
tex t-ok-ø q-keʔy-a-ʔn-aʔ

pʔisən ox ɕun ɕin ø-ɕqilix-ø
pʔisən ɕin ø-kupʔ-ø ɕaax
]kuʔə[q-lqʔi-iʔn]qilʔn[
te q-waa

loqʔ-o-l [lqʔol] 'to buy'
kandeele 'candle'
aqʔ-el 'to begin'
-tl 'again'
ɕman-pʔex 'shaman'
aqʔun-a-al 'to work'

'they went out to buy
candles, and so the
shaman began then to
work

'he will go to Huehuete-
nango because he is sick'

'while you are going west-
wards, I arrive there'

'even if you pull it
[the animal], even if
you push it, it does
not jump up'

'even though you do not
drink liquor, there will
come a time when you
drink it'

'even if it is going to
rain, I shall have to go'

'something happened to a
house yesterday when we
were watching'

'and then when it [corn]
is then dry, then we
take it down for our
tortillas'

ɕnapʔxəl 'Huehuetenango'
yaapʔ-t 'be sick'
yuuk-el 'to move'
xil 'animal'
tʔik-pʔex 'jump'
(w)kʔa-al 'to drink'

q'e'n	'liquor'	si' -u'n	'eat, drink'
pere	'but'	xp'aal	'rain'
tyem	'time'	lil t-i'x	'it is necessary'

gun 'and then' is the most common of these connectives, and it has appeared in many of the examples. It seems to occur in one situation where it does not function as a connective,

kugunssən xp'aal	'what a lot of rain'
kugunssən t-wiɕ čenəq	'what a lot of beans in
t-ux t-sk'om-el	the pod'

(kuu	'good, well')
t-wiɕ	'its "piece"'
čenəq	'bean'
t-sk'om-el	'its "inherent" shell'

The connective p'isən, which has also appeared in several examples, seems to be complex. A sən occurs in other situations,

xu'-s-sən	'in the same way'
kugunssən	'what a lot of'
o'k-s-sən	'that is all'
tisən	'like'
ma'yəsən	'already'
p'issən	'and then'
ma če's sən ..	'then they went ..'

It is possible that sən in some occurrences can be analyzed as a variant of gun {-sən} that occurs after s, and perhaps p'isən and p'issən can be analyzed as variants. However, at the present time I have no solution to these problems.

4°. In addition to the mentioned connectives, a connective element is contained in the interrogative pronouns xaa? 'where', xtox 'when (fut)', xtooxe? 'when (past)', ti? 'what', aal 'who', alkee 'which', alku?ye 'with whom', etc., xte? 'how much', ni? 'what (time)', (tu?n) tiqan 'why'.

min ti? tu?mæl sin xaa?
t-kup?-ø-a? {tkp?a?} sin

'he does not know where
he is'

xaa? ma ci?-a?-y]ca?y[
ma čis t-ux xun salaal

'where are you going?
I am going on an errand'

xtox ok ø-uul-əl sin
ok ø-uul-əl sin nči?-x

'when will he come?
he will come tomorrow'

xtooxe? {xtooo?} ø-uul-ø sin
ooxeče {ooocē} ø-uul-ø sin

'when did he come?
he came long ago'

ti? t-p?ii-y t-ee-y
mariiyə n-p?ii

'what is your name?
Maria is my name'

ti? ma ci?-y
ma čis eel-nə

'where are you going?
I am going westwards'

aal xun ma ø-kup?-ø paat-en
te xaa-?

'who burned the house
down?

xwan ma ø-kup?-ø paat-en te
xaa-?

Juan burned the house
down'

o n-əp?ii-ø {np?i} alkee
sis tu?mæl

'I have heard exactly
what the story is'

xte? s-xaaw-ø-a? t-iq?i-i?n-e
]tii?ne[

'how much did you pay
for it?

xwe? kisal s-xaaw-ø-a?
w-iq?i-i?n]wii?n[

I paid five quetzales
for it'

ni? xun ok ø-se?l t-ee-y
aq?-o-l {q?ol} waa-p?x cın

'at what time will you
take lunch [to the men
in the field], girl?
I shall go at noon'

čil ke q?iix čin-se?l

salaal	'errand'	xwe?	'five'
nči?-x	'tomorrow'	kisal	'quetzal'
ooxece	'long ago'	aq?-o-1	{q?ol} 'to take, put'
t-p?ii	'his name'	waa-p?x	'food'
eel-ne	'westwards'	čil	'mid-'
paat-əl	'to burn' (tr)	ke	'exactly'
sis	'exactly'	q?iix	'day'
tu?mäl	'idea, thought'		
xaaw-əl	iq?ii?n]-ii?n[		'to pay'

Certain conjunctions have been left out because they were separated out in *GII with the chain variety that is solidary with the connotator Spanish.

*n10

n10 The expression section of *n10 gives no yield since the derivatives of the preceding operation were registered as lexemes and thus the first operation chain was concluded with respect to the analysis of the expression.

n10 ?y $\vec{2}$ 9 :: ?y $\vec{2}$ 10 = /characteristics/, /themes/

?y $\vec{2}$ 10 :: {iB} :: n711

 {iB} :: n711

 {iy}

 {ir}

The purpose of this operation is the first analysis of the content nexus. The derivatives of the analysis are operatively called /characteristics/ and /nexus themes/. The

characteristic can in terms of the later analysis be described as a unit composed of extense morphemes, and in terms of substance as made up of the categories tense, voice, and mood.

This analysis is in accord with the observation that tense, voice, and mood are categories that characterize not specifically the verb, but the whole nexus, and that it is only a matter of usage that the formants for the extense morphemes are attached to the verb.

The verb is separated out as a connective solidary with the nexus. Thus, the analysis actually divides the nexus into three parts: the nexus theme, the characteristic, and the nexus connective, i.e. the verb. Hjelmslev discusses this particular analysis at length in "Le verbe et la phrase nominale".

There is selection between the characteristic and the theme, and the theme is the selected due to the following type of utterances,

qaat	'belch'
qaw	'mew'
qaat-ən	'belch!'
qaw-ən	'mew!'

qaat and qaw are pseudonexus. Pseudonexus were introduced, but not discussed in 29. "A PSEUDONEXUS is a non-Nexus that Enters into Line and Rank with nexus." (Réf Df 439) In other words, it is a derivate of the operation in which nexus are registered, but on the basis of the formal definition of nexus it will not be definitively identified as

such in 2.

The category of nexus themes is unrestricted; but the category of characteristics is quite restricted, and should therefore be subjected to free analysis. However, I shall not carry out the free analysis of this category.

In operation 29 I discussed some nexus that could possibly be considered complex,

ma či-kup?-ø t-pʔiy-o-ʔn	'he killed them'
]tpyʔoʔn[	
ma ciʔ n-man iqʔi-l {qʔil}	'my father went to bring
aʔ	water'

The apparent complexity of these nexus is due to the fact that the characteristic here has several formants--for its several components--and they are attached not only to the verb, but also to the "participle" or the "infinitive". However, only one characteristic is present.

Lexematics*s1s1 ʔg ʔ 10 :: ʔg ʔ 11

ʔg ʔ 11 :: {iθ} :: ʔ11 = /modulations/

{iB} :: nʔ11 = /themes/

{iγ}

{iɾ}

Analysis The expression nexus are analyzed into a /characteristic/ and a /theme/. The number of elements in the category of themes is unrestricted; but the category of characteristics has only two elements: one manifested by a rising intonation, the other manifested by a falling intonation. They are operatively called /modulations/. Thus the two nexus,

/ep'axti'xxa'ʔe.wə

'something happened to a house yesterday'

\ tokqke'yəne

'when we were watching'

are analyzed into the modulations, \ and /, and the themes, ep'axti'xxa'ʔe.wə and tokqke'yəne

The application of the commutation test to the themes reveals that themes of nexus that were registered in n9 as selected nexus have substitution to themes of selecting nexus. For example,

/ep'i.səqəsxa.l

'the people were dancing?'

\ep'i.səqəsxa.l

'the people were dancing'

The first is a selected nexus and the second a selecting nexus. The two themes that here result from the present analysis into modulations and themes contract mutual substitution.

The two modulations contract selection, the one manifested by rising intonation selects the one manifested by falling intonation.

Thus, the selection between the two categories of nexus registered in n9 is here said to be circumscribed and assigned to the modulations.

The category of themes is registered as the selecting category {iB} because the modulations occur alone manifested as a simple rising or falling tone that expresses either question or assent and encouragement for the other speaker to continue his story.

Inventory The two elements of {iB}, /modulations/, cannot be shown to be invariants through commutation. This problem is due not to the fact that they are units below the sign limit, i.e. that no sign content corresponds to each one of them, because so are units like p and k, and they are easily subjected to the commutation test. The problem with the modulations is rather due to the mutual selection that they contract.

In his analysis of Danish, Hjelmslev says about these elements, "the two modulations are not sign-expressions but expression for a relation." (Hjelmslev 1951)

Free Analysis In closely connected clauses, the two modu-

lations contract overlapping under the dominance of the modulation manifested by falling intonation:

$\backslash$ utlɛʒqexəbombe
 $\backslash$ perəminti'okkɛp'inɔ̃a'n

'the fire extinguishers
 then arrived, but now
 there was nothing they
 could do'

Through the overlapping it is established that one of the two modulations is intensive and the other extensive; and since $\backslash$ --the modulation that is manifested by falling intonation--dominates the overlapping, it is the intensive term:

ia $\backslash$
 :A $/$

This configuration corresponds to the manifestation: the manifestation of the syncretism is identical with the manifestation of the extensive term, rising intonation.

The two modulations are not analyzed further in the present operation series and they are thus taxemes.

g1 gives no yield since the content nexus were analyzed into characteristics and themes in γ10.

*s2

s2 gives no yield.

g2 7Y 11 :: 7Y 12

7Y 12 :: {iβ} :: 711 = /tense and mood/

{iB} :: 711 = /voice/

{iY}

{ir}

The nexus themes are transferred unanalyzed. The conjunctions would be registered in the present operation as selecting the rest of the theme if they had not been separated out as connective in y9.

The characteristics that were registered in y10 are now analyzed into two parts that contract mutual selection. The selected part I operatively call /tense and mood/, and the selecting part I operatively call /voice/.

The analysis is thus based on clauses that are neither active nor passive. This defectiveness is dominated by certain verbs.

In the examples given below, the characteristics contained in the clauses are included between slashes after the English translations.

ma či-kim-Ø

'they died' /non-future,
indicative/

ma či-kim-sa-an {čikimsan}

xun so?x

'they killed a coyote'
/non-future, indicative,
active/

ma či-kim-sa-eet {čikimset}	'they were killed' /non-future, indicative, passive/
ok či-kup?-eel {čikp?eel} q?uq-ee]qe[	'they will sit down' /future, indicative/
ok či-kup?-eel {čikp?eel} t-q?uq-p?a-?n	'he will put them down in sitting position' /future, indicative, active/
ok či-kup?-eel {čikp?eel} q?uq-p?a-eet q?uqp?et	'they will be put down in sitting position' /future, indicative, passive/

kim	'die'
kim-sa-al	'to cause to die'
q?uq	'sit down'
q?uq-p?a-al	'to make sit down'

/Voice/ The functional category {iB}, /voice/, appears to have a third member that I call 'passive 2'. It occurs most frequently in "impersonal" constructions of the following type:

pʔaʔn t-čʔax-o-ox {tčxoox}	'it can be washed'		
yaax t-xacʔ-o-ox {txčʔoox}	'it is slow to harvest wheat'		
seek t-čik-o-ox {tčkoox}	'it is easy to cook greens'		
ičax			
pʔaʔn	'it is possible'	seek	'easy'
yaax	'late, slow'	ičax	'greens'
triłwə	'wheat'	čik-o-ol {čkool}	'to cook'
xacʔ-o-ol {xcʔool}	'to harvest'		

However, 'passive 1' is also occasionally found in this type of construction:

pʔaʔn t-čeeʔ-t

'it can be ground'

čeeʔ-l

'to grind'

'Passive 1' and 'passive 2' appear to be commutable in a number of situations:

ma či-paat-x

'they burned' (intr)

ma či-paat-ət

'they were burned'

ma či-kupʔ-ø paat-x

'they burned down' (intr)

ma či-kupʔ-ø paat-ət

'they were burned down'

The difference in content substance between the two passives is seen quite clearly from the following examples:

ma čin-xaaw-ø kʔaas-ət

'I was awakened' (some one woke me up intentionally)

ma čin-xaaw-ø kʔis-x t-uʔn
kamyənetə

'I woke up because of the bus' (it woke me up, but unintentionally)

kʔaas-/kʔis-

'wake up'

t-uʔn

'its/his doing'

kamyənetə

'bus'

I have mentioned that there are two passive infinitives (p. 87). Their distribution is not analogous to the distribution of 'passive 1' and 'passive 2'. I believe that the passive infinitive formed from the formant for 'passive 1' occurs only following the verb aqʔ 'begin', whereas the

passive infinitive formed with the suffix pʔəx is used after verbs of motion,

ma čin-aqʔ ɕok-o-eet-el [ɕketel]	'I began to be called'
ma čeʔs ɕok-pʔəx	'there was being gone to call them'
ɕok-o-ol [ɕkool]	'to call'

Thus, I consider ɕokeetel [ɕketel] and ɕokpʔəx to be variant sign expressions.

In the above presented "impersonal" type of construction, 'passive 1' and 'passive 2' contract overlapping in connection with most verbs. 'Passive 1' dominates an overlapping between 'indicative' and 'imperative':

e-k-ɕuy-u-eet [ekɕyet]	'let them be caught!'
e-ɕ-ɕuy-u-eet [eɕyet]	'they were caught'
ɕ-ɕqilix-sa-am [ɕqilixsam]	'dry your hands!'
t-qʔapʔ-e	
ma ɕ-ɕqilix-sa-an-e [ɕqilixsane]	'you dried your hands'
t-qʔapʔ-e	
ma t-ɕqilix-saa t-qʔapʔ-e	'you dried your hands'
ɕuy-u-ul [ɕyuul]	'to catch'
ɕqilix-sa-al	'to dry'
t-qʔapʔ	'his hand'

The initial a in the first examples is formant for 'imperative'.

On the basis of this instance of dominance and the above mentioned overlapping and in agreement with manifes-

tation, the following configuration of the category {iB},
/voice/, is proposed:

iβ 'passive 1'
iB 'passive 2'
iɾ 'active'

These three elements cannot be analyzed any further
in *GIII and they are thus taxemes.

I shall discuss the formants for 'passive 1', 'pas-
sive 2', and 'active' in connection with the presentation
of the formants for 'future', 'non-future', 'imperative',
and 'indicative'.

/Tense and mood/ The characteristics were in this operation
analyzed into two parts, of which I have so far dealt with
only one.

The category {iβ}, /tense and mood/, has only three
elements, namely 'future, indicative', 'non-future, indica-
tive', and 'future/non-future, imperative':

ok k-ɕqilix-sa-ʔ k-qʔapʔ sin	}	'they will dry their hands' /future, indica- tive, active/
ok ɕi-ɕqilix-sa-al k-qʔapʔ sin		
ma k-ɕqilix-sa-a k-qʔapʔ sin	}	'they dried their hands' /non-future, indicative, active/
ma ɕi-ɕqilix-sa-an k-qʔapʔ sin		
k-ɕqilix-sa-am k-qʔapʔ-e		'dry (pl) your hands!' /future/non-future, im- perative, active/

In g3 these elements will be further analyzed, and I shall subject the resulting categories to free analysis.

g3

s3 gives no yield.

g3 7y 2 12 :: 7y 2 13

7y 2 13 :: {iB} :: n711 = /the rest/

{iB} :: n711 = /infinitive, participle/

{iY}

{iF} :: 711 = /tense/, /mood/

The nexus themes are here analyzed into two parts: one "infinitive" or "participle" with complements, two the rest. The "infinitive" or "participle" selects the rest.

In the following I underline the sign expressions for the "infinitive" or "participle" with complements:

ma ci? n-man iq?-l-l {q?il} 'my father went to bring
a? water'

ma ci? ke?y-p?ex p?ee 'there was being gone to
see/inspect the road'

iq?-l-l {q?il} 'to bring something'

a? 'water'

ke?y-el 'to see'

ke?y-p?ex 'to be seen, inspected'

p?ee 'road'

o q?-ok-Ø si?]q?oks['a small boy set fire

t-aq?-o-?n {tq?o?n} xun ni? 'to some hay'

k?waal q?aq? t-ux ni? soox

ma ɕ-kupʔ-ɕ paat-et xun xaa-ʔ 'a house burned down'
 ma ɕiʔ-eel-ɕ siʔ]ɕiʔes[oq 'they fled'
 ma ɕi-xaaw-ɕ suut-en 'they turned around'
 ma ɕi-kupʔ-ɕ ɕʔoox-ee {-ɕʔoxe} 'they squatted down'

xun	'one, a'	paat-el	'to burn' (tr)
niʔ	'small'	xaa-ʔ	'house'
kʔwaal	'boy, young'	oq	'flee'
qʔaqʔ	'fire'	suut-el	'to turn' (intr)
t-ux	'in it'	ɕʔoox-	'squat'
soox	'hay'		

ɕin-t-pʔiy-o-on kupʔ 'kill me!'
]ɕintpyʔonke[
 ɕin-t-on-en xaaw iʔy 'help me up!'

on-el 'to help'

naʔyen e-kupʔ-ɕ t-pʔiy-o-ʔn 'my father hit me'
]tpyʔoʔn[n-man
 en-kupʔ-0 t-pʔiy-o-ʔn]tpyʔoʔn['my father hit me'
n-man
 naʔyen e-kupʔ-ɕ pʔiy-o-on 'I hit my father'
]pyʔon[te n-man
 e-kupʔ-ɕ n-pʔiy-o-ʔn]npyʔoʔn['I hit my father'
 n-man
 ma ɕʔ-ok-ɕ q-meeqʔ-en q-iipʔ 'we warmed ourselves'

naʔyen	'I'
meeqʔ-el	'to warm'
-iipʔ	'oneself'

The last five examples show that whenever the complement of a "participle" precedes the directional verb for emphasis, then no personal prefix is attached to the "participle" and

the 2 is left out as it is in reflexive constructions. This is one example of the lack of concordance in the category of 'person', cf. also:

ma ǵ-kupʔ-ǵ t-pʔiy-o-ʔn	'he hit <u>me</u> '
]tpyʔoʔn[sin naʔyən	
ma ċin-kupʔ-ǵ t-pʔiy-o-ʔn	'he hit me'
]tpyʔoʔn[sin	

/Tense/ - /Mood/ The remaining part of the characteristic is in the present operation analyzed into two parts that are registered in {if} as contracting mutual solidarity. Operatively I call them /tense/ and /mood/.

There are two elements of tense: 'future' and 'non-future' and two elements of mood: 'imperative' and 'indicative'.

ok ċi-čem-o-ol {ċičmool}	}	'they will gather the sheep' /future, indica- tive/
qə karneel		
ok k-čem-aʔ {kčmaʔ} qə	}	'they gathered the sheep' /non-future, indicative/
karneel		
ma ċi-čem-o-on {ċičmon}	}	'dry (pl) your hands!' /future/non-future, imperative/
qə karneel		
ma k-čem-ǵ qə karneel		
k-ǵqilix-sa-am {kǵqilixsam}		
k-qʔapʔ-ə		

čem-o-ol {čmool}	'to gather'
karneel	'sheep'
ǵqilix-sa-al	'to dry'
t-qʔapʔ	'his hand'

ok čī-lip-əl-ə	'you (pl) will jump'
ma čī-lip-ən-ə	'you (pl) jumped'
čī-lip-ən-ə	'jump (pl)!'
ok čīʔ-ooqʔ-əl-ə	'you (pl) will weep'
ma čīʔ-ooqʔ-ə-ə	'you (pl) wept'
miʔn čīʔ-ooqʔ-ə-ə	'do not weep (pl)!'

'Future' and 'non-future' contract overlapping under the dominance of 'imperative' as exemplified above, and under the dominance of ox 'when (fut)':

ox t-awa-an-ə {tawane}	'when you (sg) will sow your field,...'
t-kooxoʔn-ə {tkoooʔne}	
tex t-awa-an-ə {tawane}	'when you (sg) sowed your field,...'
t-kooxoʔn-ə {tkoooʔne}	

The syncretism is resolvable through generalization with clauses that do not contain ox:

ok ə-awa-al-ə t-kooxoʔn-ə {tkoooʔne}	'you (sg) will sow your field'
ə-awa-an-ə {awane}	'you (sg) sowed your field'
t-kooxoʔn-ə {tkoooʔne}	
awa-al	'to sow'
t-kooxoʔn {tkoooʔn}	'his field'

Another overlapping between 'future' and 'non-future' is dominated by certain verbs in the completive form:

o n-čeeʔ kapee	'I ground coffee'
ok n-čeeʔ kapee	'I shall grind coffee'
čeeʔ-əl {čeeʔl}	'to grind'
kapee	'coffee'

Thus, I can establish that one of the two elements is intensive and the other extensive.

With certain verbs the following two forms occur:

- | | |
|---|------------------------|
| 1. qu [?] -awa-al | 'we shall sow' |
| ok Ø-awa-al-ə | 'you will sow' (sg) |
| 2. qu [?] -awa-an {qu [?] awan} | 'we sow', 'let's sow' |
| ɕ [?] -awa-an-ə {ɕ [?] awane} | 'you sow', 'sow!' (sg) |

The first form includes the elements 'future' and 'indicative'. The second form includes two resolvable syncretisms: 'imperative/indicative' and 'future / future/non-future'. In other words, when resolved, the form includes either 'indicative' and 'non-future' or 'imperative' and a syncretism 'future/non-future'. This last syncretism is dominated by 'imperative'.

However, neither 'future' nor 'non-future' has been found to dominate any syncretism, and it is thus impossible formally to determine which is the extensive and which the intensive term in the opposition. The two terms are thus contensives. Considerations of substance suggest the following configuration:

- :α' 'future'
- :A' 'non-future'

The manifestation of 'future/non-future' dominated by ox 'when (fut)' is identical with that of 'non-future',

- | | |
|---------------------|--------------------|
| ox w-awa-an {wawan} | 'when I shall sow' |
|---------------------|--------------------|

čín-awa-an {čínawan}

'I sow'

The substance of 'future' and 'non-future' will be discussed

'Imperative' and 'indicative' contract overlapping dominated by certain verbs,

ma čʔ-awa-an-ə {čʔawane}

'you (sg) sowed'

čʔ-awa-an-ə {čʔawane}

'sow (sg)!'

'Imperative' dominates an overlapping between 'future' and 'non-future', and it is thus the intensive term in the opposition:

ia 'imperative'

iA 'indicative'

The four elements 'non-future', 'future', 'imperative', and 'indicative' are taxemes.

Formants The following is a presentation of the various formants for the derivatives of the nexus characteristics. At first I shall proceed according to the verb classes that were mentioned on p. 261ff.

Class I Verbs of class I defectivate the category /voice/ and dominate an overlapping between 'imperative' and 'indicative'. Thus, the only combinations of characteristic derivatives that occur with these verbs are 'non-future, imperative/indicative' and 'future, indicative'.

The formant for 'non-future, imperative/indicative' is zero:

directionals

ma či-pon-ø	'they arrived'
či-pon-ə	'arrive (pl)'
ma či-kupʔ-ø	'they went down'

positionals

ma či-mex-ee-ø {čimxe}	'they were married (knelt)'
ma čin-čʔoox-ee-ø {činčʔoxe}	'I squatted'

various derived verbs

ma či-sas-pʔə-ø	'they became thin'
ma či-puus-es-ø	'they became moldy'
ma či-sik-t-ø	'they became tired'

simple verbs

ma ø-ɬʔeʔy-ø	'it burned' (intr)
ma či-kim-ø	'they died'

A number of verbs appear to have no future form since they occur mostly or exclusively in constructions with directionals. The formant for 'future, indicative' has several variants, they are əl, eel, and pʔəl.

After the derivational suffix pʔə the variant eel occurs and a g or x is inserted before it:

ok ø-kaq-pʔə-x-eel	'he will get mad'
ok ø-kʔis-pʔə-s-eel	'he will get hurt'
ok ø-sas-pʔə-s-eel	'he will get light (weight)'
ok ø-sas-pʔə-s-eel	'he will get thin'

One derivational suffix has three variants, əs, yəs,

and aas. After es and yes the formant for 'future, indicative' is eel and after aas it is el:

ok Ø-puus-es-eel	'it will get moldy'
ok Ø-qa?-yes-eel	'it will get bad'
ok Ø-q?en+aas-el]qn?aasel[	'it will get ripe'
ok Ø-leken-aas-el	'it will get shady'
ok Ø-p?unən-aas-el	'it will get soft'

As to the remaining verbs of class I, p?el is the variant of the formant for 'future, indicative' that is used with verbs ending in a vowel or in a short vowel plus q?; eel is the variant found after two final consonants, after verbs with a short root vowel, and after disyllabic verbs with e as vowel in the second syllable; and el is used after verbs with long vowels or with vowels accompanied by glottal stop:

p?el

ma ċin-mex-ee-Ø {ċinmxe}	'I got married (knelt)'
ok ċin-mex-ee-p?el {ċinmxeep?el}	'I shall get married'
ma ċin-slee-Ø {ċinsle}	'I worked hard'
ok ċin-slee-p?el	'I shall work hard'
ma ċin-aq?-Ø	'I began'
ok ċin-aq?-p?el	'I shall begin'

eel

ma ċin-yaax-t-Ø	'I was late'
ok ċin-yaax-t-eel {ċinyaxteel}	'I shall be late'
ma ċin-sik-t-Ø	'I was tired'
ok ċin-sik-t-eel	'I shall be tired'

ma čī-kim-Ø	'they died'
ok čī-kim-eel {-čīkmeel}	'they will die'
ma čī-kupʔ-Ø	'they went down'
ok čī-kupʔ-eel {-čīkpʔeel}	'they will go down'
	]čīkwʔeel[
ma čī-ɕaalex-Ø	'they were happy'
ok čī-ɕaalex-eel {-čīɕaləxeel}	'they will be happy'
ma čī-meelɕʔex-Ø	'they returned'
ok čī-meelɕʔex-eel {-čīmelɕʔexeel}	'they will return'

The vowel of eel is shortened after the verbs pʔax and kax:

ma čī-pʔax-Ø	'they finished'
ok čī-pʔax-eel]čīpxel[	'they will finish'
ma čī-kax-Ø	'they remained'
ok čī-kax-eel]čīkxel[	'they will remain'

el

ma čī-ɕaax-Ø	'they came'
ok čī-ɕaax-el {-čīɕaaal}	'they will come'
ma čīʔ-ɪʔy-Ø	'they passed'
ok čīʔ-ɪʔy-el	'they will pass'
ma čī-pʔee-t-Ø	'they walked'
ok čī-pʔee-t-el	'they will walk'
ma Ø-ɕʔeʔy-Ø	'it burned' (intr)
ok Ø-ɕʔeʔy-el	'it will burn'

In combinations of directionals the formant for 'future, indicative' is in some cases attached to the first of the directionals in the combination, but it is generally shorter than when suffixed to a single directional. Since the future forms of these combinations are unpredictable, I

shall list the common ones:

ma číʔ-ok uul-Ø]číʔokəl[	'they arrived here from the west'
ok číʔ-ok uul-eel]číʔokeleel[	'they will arrive here from the west'
ma čí-xaaw uul-Ø]číxaaʔwəl[	'they arrived here from down there'
ok čí-xaaw uul-eel]číxaaʔwəleel[	'they will arrive here from down there'
ma číʔ-eel uul-Ø]číʔeeʔləl[	'they arrived here from the east'
ok číʔ-eel uul-eel]číʔeeʔləleel[	'they will arrive here from the east'
ma čí-kupʔ uul-Ø]číkʔuʔl[	'they arrived here from up there'
ok čí-kupʔ uul-eel]číkʔuʔləleel[	'they will arrive here from up there'
ma číʔ-ok pon-Ø]číʔokpən[	'they arrived there from the west'
ok]číʔokpəleel[	'they will arrive there from the west'
ma čí-xaaw pon-Ø]číxapən[	'they arrived there from down'
ok]číxapəleel[	'they will arrive there from down'
ma číʔ-eel pon-Ø]číʔelpən[	'they arrived there from the east'
ok]číʔelpəleel[	'they will arrive there from the east'
ma čí-kupʔ pon-Ø]číkuʔpən[	'they arrived there from up'

ok]čikw ² elpēleel[	'they will arrive there from up'
ma čī ² -ok-Ø ɬaax]čī ² okɬ[	'they came here from the west'
ok čī ² -ok-əl ɬaax]čī ² okəɬ[	'they will come here from the west'
ma čī-xaaw-Ø ɬaax]čixax[	'they came up here'
ok čī-xaaw-əl ɬaax]čixawəɬ[	'they will come up here'
ma čī ² -eel-Ø ɬaax]čī ² eeɬ[	'they came here from the east'
ok čī ² -eel-əl ɬaax]čī ² eeɬəɬ[	'they will come here from the east'
ma čī-kup ² -Ø ɬaax]čiku ² ɬ[	'they came down here'
ok čī-kup ² -əl ɬaax]čikw ² eeɬəɬ[	'they will come down here'
ma čī ² aax-Ø ɬaax]čī ² axɬ[	'they came back here'
ok čī ² -aax-əl ɬaax]čī ² aaalɬ[	'they will come back here'
ma čī ² -ok-Ø ɬi ²]čī ² oks[	'they went east'
ok čī ² -ok-əl ɬi ²]čī ² okəs[	'they will go east'
ma čī-xaaw-Ø ɬi ²]čixax[	'they went up'
ok čī-xaaw-əl ɬi ²]čixawəɬ[	'they will go up'
ma čī ² -eel-Ø ɬi ²]čī ² es[	'they went west'
ok čī ² -eel-əl ɬi ²]čī ² eeɬəɬ[	'they will go west'
ma čī-kup ² -Ø ɬi ²]čiku ² s[	'they went down'
ok čī-kup ² -əl ɬi ²]čikw ² eeɬəɬ[	'they will go down'
ma čī ² -aax-Ø ok]čī ² a ² k[	'they returned east'
ok čī ² -aax-əl ok]čī ² a ² lək[	'they will return east'
ma čī ² -aax-Ø xaaw]čī ² axəw[	'they went back up'
ok čī ² -aax-əl xaaw]čī ² aaləw[	'they will go back up'
ma čī ² -aax-Ø eel]čī ² aap ² əl[	'they returned west'
ok čī ² -aax-əl eel]čī ² a ² lp ² əl[	'they will return west'

ma čiʔ-aax-Ø kupʔ]čiʔaxkə[	'they went back down'
ok čiʔ-aax-el kupʔ]čiʔaalkə[	'they will go back down'

Class II The division of the verbs of class II into subgroups depends primarily upon the phonological shape of the roots. There are four such basic subgroups:

- | | | | | |
|----|-----------------------------------|-----------|-----------|------------------------------|
| 1° | (C)VVC | examples: | paat | 'burn' (tr) |
| | | | liis | 'shred' |
| | | | eew | 'hide' |
| 2° | CV(V)ʔ | examples: | čeeʔ | 'grind' |
| | | | saʔ | 'dry' |
| 3° | (C)VC | examples: | pʔiy | 'hit, kill' |
| | | | kʔup | 'cut' |
| | | | aqʔ | 'put, give' |
| 4° | (C)(V)CC(ʔ)-V,
(C)CV(V)C(ʔ)-CV | examples: | axl-a | 'count' |
| | | | pkʔ-o | 'carry (over the arm)' |
| | | | q̣ilix-sa | 'make dry' |
| | | | koqʔ-pʔa | 'put down in lying position' |

The last two examples of 4° are derived verbs, the sa and the pʔa are derivational suffixes.

I am trying to set up the formants for derivatives of the characteristic. One problem in localizing the formant variants that are relevant to the four subgroups of class II verbs is illustrated by the following few forms of some of the above verbs:

'future, indicative, active' (neutral)

ok Ø-paatel	'he will burn (it)'
-------------	---------------------

ok Ø-pʔiyool]pyʔool[	'he will kill (it)'
ok Ø-ɛqilixsaal {-ɛqilixsaal}	'he will dry (it)'

'non-future, indicative, active' (completive)

o t-paate	'he burned it'
o t-pʔiy	'he killed it'
o t-ɛqilixsaa {-tɛqilixsa}	'he dried it'

No slashes segment the verb forms because the question is what parts of the quoted forms constitute the formants.

Assuming that the suffix is the same--namely l--for the following transitive infinitives,

paatl	'to burn it'
pʔiyol]pyʔol[	'to kill it'
ɛqilixsal {-ɛqilixsal}	'to dry it'

and using these infinitives in segmenting the above given forms I observe that the formant for 'future, indicative', is el for the neutral verb forms. This formant is suffixed directly to the root of the verbs of subgroup 1°, paat-el. It is suffixed to the derivational suffix of verbs of subgroup 4°--if they have such a suffix--ɛqilix-sa-el]ɛqilixsaal[. The e is the symbol for a syncretism of all five vowels, i, e, a, o, and u, and it is probably more correct to state that the formant for 'future, indicative' for the neutral forms is vowel plus l, Vl. Vl is here intended as a cover symbol for a sign expression with two variants: el following a consonant and a vowel homophonous with the preceding vowel plus l after a vowel, paat-el and ɛqilix-sa-al.

Comparison with the infinitives furthermore indicates that a vowel is inserted between the verb roots of subgroup 3° and the V1 that is formant for 'future, indicative, active', pʔiy-o-V1]pyʔool[, and between the roots and the 1 that is suffix for transitive infinitive, pʔiy-o-1]pyʔol[.

The interpretation of this vowel is crucial for the analysis of a subgroup of class II verbs that I have not yet mentioned. This subgroup 5° was not included in my first subgrouping of class II verbs because the phonological shape of its roots is identical with that of roots from subgroup 3°, and yet verbs of group 5° do not form the various forms as do verbs of 3°.

5°	kʔay	'sell'
	yuk	'move' (tr)

'future, indicative' (neutral)

ok	Ø-kʔayel	'he will sell (it)'
ok	Ø-yukel	'he will move (it)'

'non-future, indicative, active' (completive)

o	t-kʔaye	'he sold it'
o	t-yuke	'he moved it'

transitive infinitive

kʔayl	'to sell it'
yukl	'to move it'

Subgroup 5° is not numerous and I have formed and tested a number of hypotheses in an attempt to simplify the subgrouping and transfer verbs from this group to one or

several of the other subgroups. In the case of a few verbs I may have heard a short vowel in the place of a long vowel; if this should be true, then these verbs would be transferred to subgroup 1°, but it cannot be the case with all the verbs of subgroup 5°. Another observation about the verbs of this subgroup is that a number of them occur only in the neutral forms and without a complement and that others are derived from nouns. However, no general statement can be made about all these verbs and the subgroup remains as such.

Furthermore, the problem of the vowel suffixed to verb roots of subgroup 3° before certain formants and suffixes persists. It cannot be interpreted as being part of the root firstly because it is absent in the completive forms where verbs from subgroups 1° and 5° have a vowel, and secondly because the quality of the inserted vowel is predictable on the basis of the root vowel.

Since it is absent only in the completive forms, one might want to claim that it derives the neutral from the completive, but that only leads to the question of why there is no vowel or suffix that derives the neutral verbs of subgroup 1° and 5° from the completive.

The temporary results of my investigation is that verbs of subgroup 3° are characterized not only by their phonological shape, CVC, but also by a root suffix that appears in certain forms.

However the function and content of this suffix is not yet clear.

If the root vowel is a, o, or i, the suffix is o; if

the root vowel is u, the suffix is u; and if the root vowel is e, the suffix is e:

ok čī-čaq-o-ol [čīčqool]	'they will set fire to (it)'
ok čī-k'am-o-ol]čīkm'ool[	'they will receive (it)'
ok čī-čok-o-ol [čīčkool]	'they will call (him)'
ok čī-loq'-o-ol [čīlq'ool]	'they will buy (it)'
ok čī-šip-o-ol [čīšpool]	'they will tie (it)'
ok čī-č'in-o-ol]čīčn'ool[	'they will pound (it)'
ok čī-xup-u-ul [čīxpuul]	'they will close (it)'
ok čī-muq-u-ul [čīmquul]	'they will bury (it)'
ok čī-čel-e-el [čīčleel]	'they will embrace (him)'
ok čī-k'el-e-el]čīk'l'eel[	'they will pasture (them)'

Exceptions:

ok čī-k'ix-i-il [čīk'xiil]	'they will twine (it)'
ok čī-šič'-i-il [čīšič'iil]	'they will scream'
ok čī-č'es-o-ol [čīč'sool]	'they will borrow (it)'
ok čī-čem/čom-o-ol [čīč'mool]	'they will gather (it)'

In the most frequently used forms of the verbs of subgroup 3° the root vowel is dropped, and a number of these verbs appear to lose the root vowel in all the verbal forms, and they are transferred to subgroup 4°:

ok čī-k'l-o-ol]čīkl'ool[	'they will tie (it)'
o k-k'l-o-o]kkl'o[	'they tied it'
ok čī-čt-o-ol	'they will shake (it)'
o k-čt-o-o	'they shook it'

ok čl-kš-u-ul

'they will eat (it)
[corn on the cob]'

o k-kš-u-u

'they ate it'

In some cases the root vowel is revealed in forms that no longer seem to be directly associated with the verbs:

kʔal-pʔəl

'man's belt'

ma čl-čʔit-č-en

'they shook' (intr)

kʔus-en koxoʔn {kxoʔn}

'a celebration held in
the field at the time
when the corn is get-
ting ripe'

Thus, the verbs of subgroup 4° have a suffixed vowel as do verbs of 3° although it is not of the same origin in all cases. The quality of the vowel suffixed to roots of subgroup 4° is predictable only occasionally and it is present in all the forms of the verbs.

The incomplete form that I mentioned in the informal outline appears as a verb belonging to subgroup 1°, but is derived from a verb of subgroup 3°:

ma čl-čʔax-o-on {člčxon}

'they washed (it)'

ma čl-čʔaax-en {člčʔaax}

'they washed'

ma ʃ-ʃuy-u-un {ʃyun}

'he grabbed (it)'

ma ʃ-ʃuuy-en t-qʔapʔ sin

'his hand made grabbing
movements'

With respect to formants, the incomplete forms are thus treated together with the neutral forms.

To my knowledge no incomplete can be formed from any

verbs of subgroup 1°.

The formants for 'future, indicative' is thus V1 for the neutral form: el after a consonant and after a vowel plus 2, and a vowel homophonous with the preceding vowel plus 1 after a vowel:

- | | | |
|----|----------------------------|---------------------------|
| 1° | ok či-paat-el | 'they will burn (it)' |
| | ok či-liis-el | 'they will shred (it)' |
| | ok čiʔ-eew-el | 'they will hide (it)' |
| 2° | ok či-čeeʔ-el {čičeeʔl} | 'they will grind (it)' |
| | ok či-saʔ-el {čisaʔl} | 'they will dry (it)' |
| 3° | ok či-pʔiy-o-ol]čipyʔool[| 'they will kill (it)' |
| | ok či-kʔup-u-ul {čikpuul} | 'they will cut (it)' |
| | ok čiʔ-aqʔ-o-ol {čiqʔool} | 'they will give (it)' |
| 4° | ok čiʔ-axl-a-al | 'they will count (them)' |
| | ok či-pkʔ-o-ol | 'they will carry (it)' |
| | ok či-ɬqilix-sa-al | 'they will dry (it)' |
| | ok či-koʔʔ-pʔa-al | 'they will put (it) down' |
| 5° | ok či-kʔay-el | 'they will sell (it)' |
| | ok či-yuk-el | 'they will move (it)' |

A general rule according to which a vowel plus glottal stop absorbs an immediately following vowel explains the disappearance of the vowel of V1 when it is suffixed to verbs of subgroup 2°.

This formant for 'future, indicative' is not at the

same time formant for a element of /voice/; in fact, I did not include the formant for 'active' in the above forms. It is zero:

ok ɔi-paat-ø-el
 ok ɕi-ɕeeʔ-ø-el [ɕiɕeeʔl]
 ok ɕi-pʔiy-o-ø-ol]ɕipyʔool[
 ok ɕiʔ-axl-a-ø-al

When the formant for 'future, indicative' follows the formant for 'passive 1' and 'passive 2', it is eel with verbs of subgroups 1° and 5° and el with verbs from the other subgroups:

- | | | |
|----|---------------------------------|-----------------------|
| 1° | ok ɔ-paat-ət-eel [patətēel] | 'it will be burned' |
| | ok ɔ-liis-ət-eel [lisətēel] | 'it will be shredded' |
| | ok ɔ-eew-ət-eel [ewətēel] | 'it will be hidden' |
| | ok ɔ-paat-x-eel [patxeel] | 'it will be burned' |
| 5° | ok ɔ-kʔay-ət-eel | 'it will be sold' |
| | ok ɔ-yuk-ət-eel | 'it will be moved' |
| | ok ɔ-kʔay-x-eel | 'it will be sold' |
| 2° | ok ɔ-ɕeeʔ-eet-el [ɕeeʔtəl] | 'it will be ground' |
| | ok ɔ-saʔ-eet-el [seʔtəl] | 'it will be dried' |
| | ok ɔ-saʔ-x-el | 'it will be dried' |
| 3° | ok ɕi-pʔiy-o-eet-el]ɕipyʔetəl[| 'they will be killed' |
| | ok ɔ-kʔup-u-eet-el [kpetəl] | 'it will be cut' |
| | ok ɔ-aqʔ-o-eet-el [qʔetəl] | 'it will be given' |
| | ok ɔ-kʔup-u-ux-el [kpuuul] | 'it will be cut' |

- 4° ok čiʔ-axl-a-eet-el 'they will be counted'
 {čiʔaxlet}
 ok Ø-pkʔ-o-eet-el {pkʔetel} 'it will be carried'
 ok Ø-ɕqlix-sa-eet-el 'it will be dried'
 {ɕqixsetel}
 ok Ø-kocʔ-pʔa-eet-el 'it will be put down'
 {kocʔpʔetel}
 ok čiʔ-axl-a-ax-el 'they will be counted'
 {čiʔaxlaaal}

In subgroup 3°, the neutral form found for 'non-future, indicative, active' is Ø-pʔiyon]pyʔon['he killed (it)'. The last vowel represents a syncretism of a long and a short o. Generalizing from the formant for 'future, indicative' and from the neutral form for 'non-future, indicative, active' found in subgroup 1°, Ø-paat-en 'he burned (it)', I suggest that the syncretism can here be resolved as a long vowel, and that the formant for 'non-future, indicative, active' for the neutral form is Vn, cover symbol for en after a consonant and after a vowel plus ʔ (1°, 2°, and 5°), and for a vowel homophonous with the preceding vowel plus n after a vowel (3° and 4°):

- 1° ma či-paat-en 'they burned (it)'
 ma či-liis-en 'they shredded (it)'
 ma čiʔ-eew-en 'they hid (it)'
 5° ma či-kʔay-en 'they sold (it)'
 ma či-yuk-en 'they moved (it)'
 2° ma či-čeeʔ-en {čičeeʔn} 'they ground (it)'

- ma či-saʔ-en {čisaʔn} 'they dried (it)'
- 3° ma či-pʔiy-o-on]čipyʔon['they killed (it)'
- ma či-kʔup-u-un {čikpun} 'the cut (it)'
- ma čiʔ-aqʔ-o-on {čiqʔon} 'they gave (it)'
- 4° ma čiʔ-axl-a-an {čiʔaxlan} 'the counted (them)'
- ma či-pkʔ-o-on {čipkʔon} 'they carried (it)'
- ma či-ɕqilx-sa-an {čiɕqixsan} 'they dried (it)'
- ma či-koʔʔ-pʔa-an {čikoʔʔpʔan} 'they put (it) down'

With intransitive verbs, Vn is formant not for 'non-future, indicative, active', but for 'non-future, imperative/indicative':

- ma či-lip-en 'they jumped'
- či-lip-en-ə 'jump (pl)!'

Vn is also found in situations where it does not appear to be formant for either 'non-future, indicative, active' or 'non-future, imperative/indicative':

- ma či-xaaw-ø lip-en 'they jumped up'
- naʔyen ma či-kupʔ-ø pʔiy-o-on 'I killed him'
-]pyʔon[te
- kaapʔə ɕʔin-o-on]ɕnʔon['two blows'
- xun ɕuy-u-un {ɕyun} čux-pʔəl 'a handful of twigs'
- naʔyen 'I' xun 'one, a'
- kaapʔə 'two' ɕuy-u-ul {ɕyuul} 'to grab'
- ɕʔin-o-l]ɕnʔool['to pound'
- čux-pʔəl 'instrument for washing' (for
whipping oneself in sweatbath)

The formant for 'non-future, indicative' is zero when combined with the formants for 'passive 1' and 'passive 2'. The examples I shall give of the formants for the two passives will also exemplify this zero.

For the completive form the formant for 'non-future, indicative, active' is a vowel for verbs from subgroups 1°, 4°, and 5°. The vowel is manifested as e when following a consonant and as homophonous with a preceding vowel. For subgroup 2° and 3° the formant is zero:

1°	o k-paat-e	'they burned it'
	o k-liis-e	'they shredded it'
	o k-eeu-e	'they hid it'
5°	o k-kʔay-e	'they sold it'
	o k-yuk-e	'they moved it'
2°	o k-ʒeeʔ-Ø	'they ground it'
	o k-saʔ-Ø	'they dried it'
3°	o k-pʔiy-Ø	'they killed it'
	o k-kʔup-Ø	'they cut it'
	o k-aqʔ-Ø	'they gave it'
4°	o k-axl-a-a {kaxla}	'they counted them'
	o k-pkʔ-o-o {kpkʔo}	'they carried it'
	o k-ʒqiiix-sa-a {kʒqixsa}	'they dried it'
	o k-koʒʔ-pʔa-a {kkoʒʔpʔa}	'they put it down'

For the completive form, the formant for 'future, indicative, active' is aʔ, manifested as e(ʔ) with verbs of

subgroup 1° and 5°, and as zero with verbs of subgroup 2°:

- | | | |
|----|------------------------------|-------------------------|
| 1° | ok k-paat-a? [kpaate] | 'they will burn it' |
| | ok k-liis-a? [kliise] | 'they will shred it' |
| | ok k-eew-a?]kee?wə[| 'they will hide it' |
| 5° | ok k-kʔay-a?]kkʔaʔyə[| 'they will sell it' |
| | ok k-yuk-a? [kyuke] | 'they will move it' |
| 2° | ok k-čeeʔ-a?]kčeeʔ[| 'they will grind it' |
| | ok k-saʔ-a?]ksaʔ[| 'they will dry it' |
| 3° | ok k-pʔiy-a?]kpyʔaʔ[| 'they will kill it' |
| | ok k-kʔup-a? [kkaʔ] | 'they will cut it' |
| | ok k-aqʔ-a? [kaʔ] | 'they will give it' |
| 4° | ok k-axl-a-aʔ]kaxlaʔ[| 'they will count them' |
| | ok k-pkʔ-o-aʔ]kpkʔaʔ[| 'they will carry it' |
| | ok k-čqilx-sa-aʔ]kčqixsaʔ[| 'they will dry it' |
| | ok k-kočʔ-pʔa-aʔ]kkočʔpʔaʔ[| 'they will put it down' |

If the suffixed vowel that precedes the formant aʔ is o or a, then the two vowels merge and generally result in aʔ; if the suffixed vowel that precedes the formant aʔ is i, e, or u, then it is this vowel that dictates the quality of the vowel that results from the merging of the two:

- | | |
|------------------------|---------------------------|
| ok k-kn-o-aʔ]knaʔ[| 'they will search for it' |
| ok k-pqʔ-o-aʔ]kpqʔaʔ[| 'they will hull it' |
| ok k-wkʔ-a-aʔ]kwkʔaʔ[| 'they will drink it' |
| ok k-mn-a-aʔ]kmaʔ[| 'they will lend it' |
| ok k-es-i-aʔ]kesiʔ[| 'they will de grain it' |

ok k-əpʔ-i-aʔ]kʔiʔ[	'they will hear it'
ok k-sqʔ-e-aʔ]kʔsqʔeʔ[	'they will embrace him'
ok k-iʔʔ-l-e-aʔ]kiʔlʔeʔ[	'they will wake over him'
ok k-kʔs-u-aʔ]kksuʔ[	'they will eat it [corn on the cob]'
ok k-pš-u-aʔ]kpšʔ[	'they will chop it'

In the case of two verbs the sequence o-aʔ is contracted to oʔ:

ok k-čiʔ-o-aʔ]kčioʔ[	'they will eat it [meat]'
ok k-aʔy-o-aʔ]kyoʔ[	'they will wait for him'

Note: At this point I must repeat that the completive forms with all but a very few verbs occur extremely rarely in the Todos Santos dialect.

The formant for 'future/non-future, imperative' is Vm, cover symbol for əm following either a consonant or a vowel plus ʔ and for a vowel homophonous with the preceding vowel plus m after a vowel:

1° k-paat-əm	'burn (pl) it!'
k-liis-əm	'shred (pl) it!'
k-əew-əm	'hide (pl) it!'
5° k-kʔay-əm	'sell (pl) it!'
k-yuk-əm	'move (pl) it!'
2° k-čeeʔ-əm]kčeeʔm[	'grind (pl) it!'
k-saʔ-əm]ksaʔm[	'dry (pl) it!'

- 3° k-pʔiy-o-om]kpyʔom['kill (pl) him!'
 k-kʔup-u-um {-kkpum} 'cut (pl) it!'
 k-aqʔ-o-om {-kqʔom} 'give (pl) it!'
- 4° k-axl-a-am {-kaxlam} 'count (pl) them!'
 k-pkʔ-o-om {-kpkʔom} 'carry (pl) it!'
 k-qilix-sa-am {-kqixsam} 'dry (pl) it!'
 k-koʔ-pʔa-am {-kkoʔpʔam} 'put (pl) it down!'

When 'imperative' combines with 'passive 1' rather than with 'active', it has the formant e:

- e-t-aqʔčla-eet]etaqʔčlet['let it be guarded!'
e-k-axl-a-eet]ekaxlet['let them be counted!'
e-k-ok aqʔčla-eet]aqʔčlet[qe 'let them be guarded!'
e-k-siʔ soʔ-eet]seʔt[t-ux 'let them be thrown
 nimaʔ waʔ into the river!'
e-t-ok-ø siʔ]etoks['let him go in there '
- | | |
|------------|--------------------------|
| aqʔčl-a-al | 'to guard, take care of' |
| axl-a-al | 'to count' |
| soʔ-l | 'to throw' |
| t-ux | 'in it' |
| nimaʔ | 'river' |

The formant for 'passive 1' is eet for verbs of subgroups 2°, 3°, and 4°; and et for verbs of subgroups 1° and 5°:

- 1° o ø-paat-et-ø 'it was burned'
 o ø-liis-et-ø 'it was shredded'
 o øʔ-eew-et-ø 'it was hidden'

- 5° o Ø-kʔay-ət-Ø 'it was sold'
 o Ø-yuk-ət-Ø 'it was moved'
- 2° o Ø-čeeʔ-eet-Ø]čeeʔt['it was ground'
 o Ø-saʔ-eet-Ø]seʔt['it was dried'
- 3° o čl-pʔiy-o-eet-Ø]čipyʔet['they were killed'
 o Ø-kʔup-u-eet-Ø]kpet['it was cut'
 o Ø-aqʔ-o-eet-Ø]qʔet['it was given'
- 4° o člʔ-axl-a-eet-Ø]člʔaxlet['they were counted'
 o Ø-pkʔ-o-eet-Ø]pkʔet['it was carried'
 o Ø-čqilx-sa-eet-Ø]čqixset['it was dried'
 o Ø-kočʔ-pʔa-eet-Ø]kočʔpʔet['it was put down'

In a few verbs of subgroup 2° the root vowel--in all cases a--does not assimilate to the vowel of the formant:

- o čl-kʔaʔ-eet-Ø]člkʔaʔt['they were bewitched'
 o Ø-waaʔ-eet-Ø]waaʔt['it was eaten'
 o Ø-yaaʔ-eet-Ø]yaaʔt['it was squandered'
 o Ø-pʔaʔ-eet-Ø]pʔaʔt['it was bitten off'

The formant for 'passive 2' is a homophonous vowel plus x for verbs from subgroups 3° and 4°, and x for verbs from subgroups 1°, 2°, and 5°:

- 1° pʔaʔn t-paat-x-Ø 'it can be burned'
 pʔaʔn t-liis-x-Ø 'it can be shredded'
 pʔaʔn t-eew-x-Ø 'it can be hidden'
- 5° pʔaʔn t-kʔay-x-Ø 'it can be sold'

	pʔaʔn t-yuk-x-Ø	'it can be moved'
2°	pʔaʔn t-çooʔ-x-Ø	'it can be fried'
	pʔaʔn t-saʔ-x-Ø	'it can be dried'
3°	pʔaʔn t-pʔiy-o-ox-Ø]tpyʔoox[	'it can be killed'
	pʔaʔn t-kʔup-u-ux-Ø {tkpuux}	'it can be cut'
	pʔaʔn t-aqʔ-o-ox-Ø {tqʔoox}	'it can be given'
4°	pʔaʔn t-axl-a-ax-Ø	'it can be counted'
	pʔaʔn t-pkʔ-o-ox-Ø	'it can be carried'
	pʔaʔn t-çqilix-sa-ax-Ø	'it can be dried'
	pʔaʔn t-koçʔ-pʔa-ax-Ø	'it can be put down'

The incomplete forms in subgroup 1° can form neither 'passive 1' nor 'passive 2'.

The forms of class II verbs with the formants here discussed are charted below. In the charts, the forms are given in ideal notation only and no personal prefixes are included. The formants in question are underlined.

infinitive

	<u>'active'</u>		<u>'passive 1/passive 2'</u>	
	<u>transitive</u>	<u>intransitive</u>		
1°	paat- <u>l</u>	paat- <u>əl</u>	paat-ət- <u>əl</u>	paat-pʔəx
5°	kʔay- <u>l</u>	kʔay- <u>əl</u>	kʔay-ət- <u>əl</u>	kʔay-pʔəx
2°	čeeʔ- <u>l</u>	čeeʔ- <u>əl</u>	čeeʔ-eet- <u>əl</u>	čeeʔ-pʔəx
3°	pʔiy-o- <u>l</u>	pʔiy-o- <u>ol</u>	pʔiy-o-eet- <u>əl</u>	pʔiy-pʔəx
4°	axl-a- <u>l</u>	axl-a- <u>al</u>	axl-a-eet- <u>əl</u>	axl-a-pʔ-pʔəx

		'active'		'passive 1'	'passive 2'
		neutral	completive		
'indicative'					
'future'	1°	paat-ǵ-əl	paat-aʔ	paat-ət-eel	paat-x-eel
	5°	kʔay-ǵ-əl	kʔay-aʔ	kʔay-ət-eel	kʔay-x-eel
	2°	čeeʔ-ǵ-əl	čeeʔ-aʔ	čeeʔ-eet-əl	saʔ-x-əl
	3°	pʔiy-o-ǵ-ol	pʔiy-aʔ	pʔiy-o-eet-əl	kʔup-u-ux-əl
	4°	axl-a-ǵ-al	axl-a-aʔ	axl-a-eet-əl	axl-a-ax-əl
'non-future'	1°	paat-ən	paat-ə	paat-ət-ǵ	paat-x-ǵ
	5°	kʔay-ən	kʔay-ə	kʔay-ət-ǵ	kʔay-x-ǵ
	2°	čeeʔ-ən	čeeʔ-ǵ	čeeʔ-eet-ǵ	saʔ-x-ǵ
	3°	pʔiy-o-on	pʔiy-ǵ	pʔiy-o-eet-ǵ	pʔiy-o-ox-ǵ
	4°	axl-a-an	axl-a-a	axl-a-eet-ǵ	axl-a-ax-ǵ
'imperative'	1°	paat-əm			
	5°	kʔay-əm			
	2°	čeeʔ-əm			
	3°	pʔiy-o-om			
	4°	axl-a-am			

Some time adverbials:

ma	'simple, recent past'
o	'simple, distant past'
ə	'narrative, recent past'
e	'narrative, distant past'
ok	'future (assertion)'
ɕin	'simultaneity'
eewə	'yesterday'
kaapʔə-xee	'the day before yesterday'
nɕiʔ-(x)	'tomorrow'
kaapʔ-x	'the day after tomorrow'
xnaapʔ-ə	'last year'
xnaapʔ	'next year'
ɕqee	'a short while ago'
ooxəqə {ooocə}	'a long time ago'

Examples with the expressions for the adverbials underlined:

ɕin ɕ-eel-ɕ ɕaax]eɕ[si pliʔʔ-en t-ux n-qʔapʔ	'it [blood] is trickling out on my hand'
wiʔ-y-əl pə wiʔ-y-əl naʔ {nə}	'is it expensive?' 'yes (<u>indeed</u>), expensive'
ɕiʔ-aqʔ-pʔəl lo sin aqʔən-a-al nɕiʔ-x	'they will <u>probably</u> begin to work tomorrow'
t-miix kə ɕil kə qʔiix	'in the <u>very</u> center' ' <u>exactly</u> at noon'
ɕin ɕ-xaaw-ɕ kə ɕun t-iq-ə-ʔn qaʔ sis	'he is <u>just</u> lifting it' 'very bad'
ɕin ɕ-ɕom-o-on {-ɕmon} sis pʔis-et en-siʔ-ɕ aqʔən-a-al t-ux t-xaa J.P.	'she weaves <u>very well</u> ' 'if <u>only</u> I <u>had</u> gone to work in J.P.'s house'

cuq min ɛ-uul-ø-a?]ɛuu?lɛ[
t-ux t-k?u?x-ə

'you might not think
of it'

nuq ø-xaaw-ø se?y-pəx-ə

'you might get frightened'

elx ɛin ɕin-p?e-t-ø

'I am simply out for a
walk'

ɛqilix-s

'it is still dry'

ɛqilix-tl

'it is already dry'

ɕuk ma ɛ?-ok-ø si?]ɛ?oks[

'there was just enough
room for it to get in
there'

en-ok-ø si?]enoks[ten
t-u?ye paalə

'I was working with the
priest'

eewə-tq n-si?-le-n tex
t-uul-ø ninq?ilix

'counting from the time
when the fiesta was over
I went the day before'

maaxe {maaa} xɕis
ø-kim-ø-a? {ma?} sin

'he died away over there'

xnaap? si ɕin-uul-əl

'not till next year I
shall come back'

pilɛ?-əl 'to trickle'

sis 'very'

si '"repetition"'

qa? 'bad'

wi? 'price'

ɕom-o-ol {ɕmool} 'to weave'

na? '"assertion"'

min 'not, no'

lo 'probably'

-et '"contrary to fact"'

aq?en-a-al 'to work'

t-xaa 'his house'

t-milix 'its middle'

cuq '"hypothetical
possibility"'

ke 'precisely'

nuq

ɕil 'mid-'

se?y-pəx 'frightened'

q?ilix 'day'

elx 'simply'

iq-əl 'to carry'

p?e-t-əl 'to walk'

ɛqilix 'dry'

tl 'already'

s 'still'

uul t-ux t-k?u?x 'come to his center, remember'

<u>ten</u>	'"duration"'	paale	'priest'
t-u ² ye	'with him'	x ² ci ²	'there'
<u>cuk</u>	'barely missing contact'		

Also included among the adverbials are prepositional phrases of the following type:

mčet cin Ø-axp ² e-en <u>te</u>	'the machete is used <u>for</u>		
<u>c²om-p²el s²il²</u>	<u>chopping wood</u> '		
t-ux t-neex-el {tneeel} cin	'in the beginning people		
či-kup ² -Ø meel-Ø ² ax sxaal	changed <u>into animals</u> '		
<u>te xil</u>			
Ø-ok-Ø t-aq ² -o- ² n {tq ² o ² n}	'he put his belt on <u>as</u>		
sin t-k ² al-p ² el sin <u>te</u>	<u>a tail for himself</u> '		
<u>t-xee² sin</u>			
mčet	'machete'	meel-Ø ² ax	'convert'
axp ² e-l	'to be used for'	sxaal	'people'
c ² om-p ² el	'chopping'	xil	'animal'
s ² il ²	'firewood'	k ² al-p ² el	'man's belt'
neex	'early, first'	t-xee ²	'his tail'

However, a number of phrases that may appear to be prepositional phrases are not analyzed as such because they are in fact composed of two nouns:

t-ux n-xaa	'its "inside-ness" my house' (in my house)
t-u ² ye n-man	'his "with-ness" my father' (with my father)
t-i ² x n-xaa	'its "at-ness"/"against-ness" my house' (at/against my house)
w-i ² x	'my "at-ness"' (my clothes)
t-xaq ² n-xaa	'its "under-ness" my house' (under my house)

t-iip ² ex n-xaa	'its "above-ness" my house' (above my house)
t-a ² n-xaa	'its "near-ness" my house' (near my house)
k-sool sxaal	'their "among-ness" people' (among people)
t-clax n-xaa	'its "next to -ness" my house' (next to my house)
t-u ² n kp ² il	'its "with-ness"/doing axe' (with an axe)
t-wi ² c ² oc ²	'its surface earth' (on the earth)

g4 is subdivided for the analysis of a number of languages that have case distinctions for "indirect object", "object", and "subject". In Mam, however, these "parts of the sentence" are all registered in one category in operation g6.

*s5

s5 gives no yield.

g5 ʔʔ ² 14 :: ʔʔ ² 15

 ʔʔ ² 15 :: {iβ} :: nʔ11

 {iB} :: ʔ11 = te

 {iy}

 {ir}

The prepositional phrases that were exemplified in operation g4 above are analyzed into the preposition te and the rest. te selects the rest.

Other derivatives of preceding operations are transferred unanalyzed.

s6

s6 gives no yield.

q6 ?y ↗ 15 :: ?y ↗ 16

?y ↗ 16 :: {iB} :: n?11 = /nouns/
 {iB} :: n?11 = /nouns/
 {iY} :: n?11 = /nouns/
 {iR}

In the present operation various phrases are analyzed into components registered in the functival categories {iB}, {iB}, and {iY}.

Most underived nouns are--when not possessed--registered in {iB} as selected:

t-ɕii ɕeex	'its mouth the horse' (the horse's mouth)
ɕp?ux ɕeex	'a group of horses'

In both of these examples ɕeex 'horse' is selected. When the nouns are possessed, they are registered in {iY} as being selected and selecting at the same time:

t-ɕii t-ɕeex lkalt	'its mouth his horse the mayor' (the mayor's horse's mouth)
ɕp?ux t-ɕeex lkalt	'the mayor's group of horses'

t-ɕeex is selected by t-ɕii and ɕp?ux, but selects lkalt.

Nouns of the type ɕpʔux 'flock', pkʔox 'armful', pʔyux 'group', etc. are always registered in {iγ}:

kaapʔə pkʔox siiʔ 'two armfuls of firewood'

pkʔox is selected by kaapʔə and selects siiʔ.

The units sin 'grown man', sux 'grown woman', qʔaa 'boy', cin 'girl', and xil 'animal' are registered in {iγ}:

t-ɕii sux 'her mouth'

sux n-ɕu 'my mother'

t-ɕii sin 'his mouth'

xun sin sineq 'a man'

-ɕuu 'mother'

-ɕii 'mouth'

xun 'one, a'

sineq 'man'

sux is selected by t-ɕii and selects n-ɕuu; sin is selected by t-ɕii and selects sineq.

The nouns that are used as prepositions, t-ux 'its "inside-ness"', t-xaqʔ 'its "under-ness"', etc. are registered in {iB}; they appear only as selecting:

t-ux ɕuux 'its "inside-ness" the sweatbath'
(in the sweatbath)

t-ux selects ɕuux.

The analysis in q6 will often require several steps: in t-ɕii t-man sin, t-ɕii selects t-man sin, and t-man selects sin.

I find that all the elements here can constitute an

uncatalyzed lexeme, but the same is not true for elements of later operations, and the derivatives of the present operation are thus recognized as syllabemes according to Rés Df 194, "SYLLABEMES are the highest-Degree Elements of which each alone can constitute an unCatalyzed Lexia."

Syllabematics*t1t1 ?g → 16 :: ?g → 17

?g → 17 :: {iβ} :: n?11 = /selected syllables/
 {iB} :: n?11 = /selecting syllables/
 {iγ}
 {iτ}

In the present analysis /syllables/ are registered in the functival categories {iβ} and {iB}. The following utterances

°ep'ax	'it happened'
°ətax	'greens'
°lane	'lying down'
°sikte·l	'will be tired'
'xulel	'to burn' (intr)
'wi'ged	'my burden'
'c'omp'əl	'chopping'
'tane	'your skirt'

are analyzed into selected and selecting syllables. In the first four examples the selecting syllable precedes the selected one, and in the last four the selected syllable precedes the selecting one.

' and ° are symbols for strong and weak stress, respectively. These symbols also serve to mark syllable

boundaries; the symbol that marks the stress of the second syllable is placed ambiguously because it cannot at this point be determined precisely where the boundary is in each individual case.

The inventories of the two categories are unrestricted and therefore do not have to be subjected to free analysis.

t1 gives no result.

*t2

t2 ? $\bar{E}$ $\rightarrow$ 17 :: ? $\bar{E}$ $\rightarrow$ 18

 ? $\bar{E}$ $\rightarrow$ 18 :: {i $\bar{B}$ }

 { $\bar{B}$ }

 { $\bar{V}$ }

 { $\bar{r}$ } :: n? $\bar{11}$ = /themes/, /characteristics/

The /syllables/ are analyzed into /characteristics/ and /syllable themes/. These two categories contract mutual solidarity. The category of themes is unrestricted, and the category of characteristics has two elements: one manifested by strong stress, the other manifested by weak stress.

The selection by which the two categories of syllables were registered in t1 is here circumscribed and assigned to the two characteristics: $\circ$, weak stress, selects $\bar{1}$, strong stress. Due to this selection there are problems with the

application of the commutation test similar to the problems encountered with the /modulations/, cf. p. 103.

However, I shall not go into the commutation between them, nor shall I subject them to free analysis because their registration is only temporary. In the subsequent analysis the position of the phonetic strong stress proves to be predictable in terms of certain features of the syllable themes, and it must be reduced, probably to a signal for expression junctions of a certain degree.

r2 ?y ⇌ 17 :: ?y ⇌ 18

 ?y ⇌ 18 :: {iβ} :: n711 = /themes/
 {;B} :: n711 = /characteristics/
 {;y}
 {;r} :: n711 = /pseudothemes/

The elements registered in {;B} are 'definite' and 'indefinite'; and a number of other elements that include a 'case' and a 'person'; these elements will be further analyzed and discussed later in the operation.

The selection between the /characteristics/ and the /themes/ is based on examples of units that appear both as pseudothemes, i.e. without any characteristics, and as themes:

čeex	'horse'
t-čeex	'his horse'

/Article/ The formant for 'definite' is a? when 'definite'

is combined with 'singular'. The formant for 'indefinite' is zero:

xa suuʔx-aʔ	'that woman'
xun suuʔx-Ø	'a woman'

It appears that when 'definite' is combined with 'plural', it is expressed by qe:

t-ux t-neex-el {tneeel}	'formerly these (women)
e-čom-o-on {ečmon} <u>qe</u> sux	wove, but now they do
yal xaʔlə ya min-tl	not'
t-ux t-neex-el {tneeel} <u>qin</u>	'formerly (women) wove,
či-čom-o-on {čičmon} sux	but now they do not'
yal xaʔlə ya min-tl	

My analysis of the correlation between 'definite' and 'indefinite' is not sufficient to establish the configuration of the category.

The two elements are taxemes.

/Person/ The remaining parts of the characteristics are further analyzed in two subsections of the present operation.

At first two functival categories are realized:

::	{:β}	/person/
	{:B}	/case/
	{:γ}	
	{:r}	

The category operatively called /person/ is analyzed into two parts that contract mutual solidarity. The one

part I shall operatively call /interlocutor/. The other category I call /exclusion/. Both /interlocutor/ and /exclusion/ are registered as elements of functional category {iɾ}.

/Interlocutor/ The category /interlocutor/ has four members operatively called 'first singular', 'non-first singular', 'first plural', and 'non-first plural'.

All four elements contract overlapping under the dominance of emphasis:

miʔn ɕʔ-ok-ø t-kʔaʔ-ʔn-ə <u>naʔyən</u>	'do not bewitch <u>me</u> !'
miʔn ɕin-ok-ø t-kʔaʔ-ʔn-ə	'do not bewitch me!'
ma ø-kupʔ-ø t-pʔiy-o-ʔn-ə]tpyʔoʔnə[<u>xeeʔ</u>	'you hit <u>them</u> '
ma ɕi-kupʔ-ø t-pʔiy-o-ʔn-ə]tpyʔoʔnə[	'you hit them'
ma ø-kupʔ-ø t-pʔiy-o-ʔn]tpyʔoʔn[<u>xooʔ</u>	'he hit <u>us</u> '
ma qu-kupʔ-ø t-pʔiy-o-ʔn]tpyʔoʔn[	'he hit us'

Under the dominance of 'narrative, distant past', the elements 'non-first singular', 'first plural', and 'non-first plural' contract overlapping:

<u>en</u> -kʔay-ən	'I was selling'
<u>e</u> -kʔay-ən	'he/we/they were selling'

'First singular' dominates an overlapping between the

two elements of the category /exclusion/, with which the category /interlocutor/ contracts solidarity:

q-xaa		'our (incl) house'
q-xaa-yəʔ	]qxaaʔyə[	'our (excl) house'
n-xaa		
n-xaa-yəʔ	]nxaaʔyə[	'my house'

The choice between n-xaa and n-xaa-yəʔ]nxaaʔyə[is connotatively conditioned, some people use the one form and others use the other.

On the basis of these overlappings and in agreement with considerations of manifestation I propose the following configuration for the category /interlocutor/:

iβ	'first singular'
iB	'first plural'
iγ	'non-first plural'
iΓ	'non-first singular'

The operative names of the four elements may suggest a different configuration, namely:

	iα	iA
iα	'first singular'	'non-first singular'
iA	'first plural'	'non-first plural'

The element 'first singular' fits well into this as the intensive term. However, I find the first given configuration more appropriate considering that the manifestation of the syncretism 'first singular/first plural/non-

first plural/non-first singular' is identical with that of 'non-first singular' which can therefore be expected to be extensive.

/Exclusion/ The category that is solidary with the category /interlocutor/, /exclusion/, has either two or four elements:

t-man- $\emptyset$ ₍₁₎	'his father'
k-man- $\emptyset$ ₍₁₎	'their father'
t-man-a ₍₁₎	'your (sg) father'
k-man-a ₍₁₎	'your (pl) father'
n-man- $\emptyset$ ₍₂₎	'my father'
q-man- $\emptyset$ ₍₂₎	'our (incl) father'
n-man-a [?] ₍₂₎	'my father'
q-man-a [?] ₍₂₎	'our (excl) father'

The problem is whether $\underline{a}$ and $\underline{a}^?$ and $\emptyset$ ₍₁₎ and $\emptyset$ ₍₂₎ are variants, i.e. varieties, or invariants.

If the category is analyzed into four elements, then the elements are the following: 'second person' ($\underline{a}$ ₍₁₎), 'non-second person' ($\emptyset$ ₍₁₎), 'exclusive' ($\underline{a}^?$ ₍₂₎), and 'inclusive' ($\emptyset$ ₍₂₎).

If only two elements are registered, then they could be: "'one of the two parties in a dialogue"' ($\underline{a}$ and $\underline{a}^?$) and "'neither or both of the two parties in a dialogue"' ($\emptyset$).

I admit that the translations of these two tentative elements appear quite complicated and awkward, but then that may be a fact pertaining to English and not to Mam.

Invoking the principle of simplicity, I favor--at least for the time being--the analysis of the category into two elements.

One occurrence of the element that has the formants a and aʔ dominates an overlapping between the two elements in another occurrence of the category:

ma ɬʔ-ok-Ø k-kɛʔy-a-ʔn-a	'they saw you (sg)'
	'you (pl) saw him'

The final a can be connected with either 'non-first singular' (ɬʔ) or with 'non-first plural' (k).

Thus, when the syncretisms are resolvable, the two utterances are written:

ma ɬʔ-ok-Ø k-kɛʔy-a-ʔn-a-Ø	'they saw you (sg)'
ma ɬʔ-ok-Ø k-kɛʔy-a-ʔn-Ø-a	'you (pl) saw him'

When the syncretisms are not resolvable, the utterance is written as follows:

ma ɬʔ-ok-Ø k-kɛʔy-a-ʔn-a/Ø-a/Ø

On the basis of this, the configuration of the category is found to be:

:a	"one of the two parties"
:A	"neither or both"

When '"one of the two parties"' combines with 'non-first singular' and 'non-first plural', its formant has three variants: a following a consonant, y following a

vowel or a vowel plus glottal stop, and ye following x; and when it combines with 'first singular' or 'first plural', the two variants of its formant are: e? after a consonant and ye? after a vowel, a vowel plus glottal stop, or x:

t-man- <u>e</u>	'your (sg) father'
t-xee?- <u>y</u>	'your (sg) tail'
t-xaa- <u>y</u>	'your (sg) house'
t- <u>čeeex-ye</u> [tčeeexə]	'your (sg) horse'
q-man- <u>e?</u>	'our (excl) father'
q-xee?- <u>ye?</u>	'our (excl) tails'
q-xaa- <u>ye?</u> [qxaa?ye]	'our (excl) house'
q- <u>čeeex-ye?</u> [qčeeexə]	'our (excl) horse'

For the latency of y in t-čeeex-ye and q-čeeex-ye? see p. 190.

/Case/ The category operatively called /case/ has two members: 'subject case' and 'object case'.

The formants for the cases are at the same time formants for /interlocutor/. I have mentioned in the informal outline that there are two formants for each member of the category /interlocutor/, there called the category of person. These two sets of formants are variants in all but two situations, namely when prefixed to a completive form or to a transitive imperative form, where they also express case:

o čín-ǵ-il-ǵ 'they saw me'

čín is here formant for 'first singular, object case' and

k̃ is formant for 'non-first plural, subject case'. In

o či-w-il-ø

'I saw them'

či is formant for 'non-first plural, object case' and w is formant for 'first singular, subject case'. Some examples with imperative forms:

čín-k̃-ɬuy-u-um {čínk̃ɬyum}

'catch (pl) me!'

miʔn ɬ-t-t-ɬqix-sa-a-y

'do (sg) not dry it!'

{tɬqixsay}

In all other situations where a member of the category /interlocutor/ is found, the two 'cases' can either be said to contract overlapping or the category can be said to be defective.

The assumption of a selection contracted by /interlocutor/ and /case/ (/interlocutor/ ← /case/) is based on the observation that there are occurrences of the elements of /interlocutor/ not accompanied by /case/.

Neither 'subject case' nor 'object case' dominates any overlappings, and at present I have no arguments for preferring one of the following two configurations:

- 1 :a' 'object case'
- :A' 'subject case'

- 2 :a' 'subject case'
- :A' 'object case'

Formants for /Interlocutor/ and /Case/ There are two sets of formants for the four elements of the category /interlocutor/:

I	II	
w	čín	'first singular'
t, Ø	ɛʔ, ɛ, Ø	'non-first singular'
q	quʔ, qu	'first plural'
ʁ	číʔ, čí	'non-first plural'

The variants w, quʔ, and číʔ appear before vowels, the variants n, qu, and čí appear before consonants. It may be possible to interpret the ʔ that appears after the qu and čí in the variants preceding a vowel as a connective, i.e. "a Functionive that under certain conditions is Solidary with the Relation Establishing Complex Units of a certain Degree." (Réf Df 151). However, this would not agree with my analysis of long vowels as geminate vowels. It would result in the insertion of ʔ between all vowels: quuuul *]quʔuʔul['we arrive here' and xaaʔ *]xaʔaʔ['our house'.

The variant ɛ occurs only with the following three verbs uul 'come', iʔy 'pass', and aqʔ 'begin'; ɛʔ is used with other verbs beginning with a vowel; and Ø of set II is used before a consonant and with all verbs when preceded by the adverbials ɛín 'simultaneity' and ok 'future (assertion)'. Ø of set I is used with completive and imperative forms that begin with a consonant and have no other overt personal formant.

The choice between formants of set I and formants of

set II depends upon the root to which they are prefixed, upon the suffixes of that root, and upon other units in the sentence. Temporarily I ignore the situations where these two sets of formants are invariants, i.e. where they are also formants for 'subject case' and 'object case'.

Set I formants appear prefixed to nouns, to participial forms of transitive verbs, and to a derived verb form that I have not mentioned before (cf. p. 225).

<u>n</u> -xaa	'my house'
<u>w</u> -aaʔ	'my water'
<u>t</u> -man	'his father'
ma Ø-xaaw-Ø ʔaax]xaʔ[	'I drew water'
<u>n</u> -pul-u-ʔn {-npluʔn} aʔ	
ma ʕeʔʂ <u>w</u> -axl-a-ʔn	'I counted them'
ma Ø-ʔaax-Ø <u>k</u> -loqʔ-o-ʔn	'they bought a house'
{kʌqʔoʔn} xun xaa-ʔ	
ma-tq <u>w</u> -uul-le-n tex	'I had just come when
t-kim sin	he died'
kaapʔə-xee-tq <u>n</u> -siʔ-le-n	'I went two days before
tex t-uul ʔniŋʔiix	the fiesta'
ma Ø-pʔin-t-Ø laaxəx {-laaax}	'it has been ten years
xnaapʔqʔii t-kupʔ-le-n	since my leg broke'
tooq-x n-qen	
pul-u-ul {-pluul} 'to draw (water)'	ma pʔint '"it has been" (about time)
aʔ 'water'	laaxəx {-laaax} 'ten'
axl-a-al 'to count'	xnaapʔqʔii 'year'
loqʔ-o-ol {-lqʔool} 'to buy'	tooq-əl 'to break'
niŋʔiix 'fiesta'	n-qen 'my leg'
kaapʔə-xee 'the day before yesterday'	

Formants of set II are used with other verb forms:

ma <u>č</u> in-axl-a-an k-iʔx xil	'I counted them (animals)'
o <u>č</u> -uul-ø sin	'he came'
ma <u>č</u> ʔ-eel-ø k-poqʔ-o-ʔn -[kʔpoqʔoʔn] čenəq	'they hulled beans'
o <u>č</u> i-kupʔ-ø čʔaq	'they fell down'
ck <u>qu</u> -sik-t-eel	'we will get tired'
ck <u>č</u> -xaaw-əl xuul-ən xun-tl xaa-ʔ	'another house is going to go up in flames'

poqʔ-o-ol [pqʔool]	'to hull'
čenəq	'beans'
čʔaq	'fall'
sik-t	'be tired'
xuul-əl	'to burn, flame'

In conjunction with the adverbials 'narrative, recent past' and 'narrative, distant past', the four elements of /interlocutor/ have other formants:

en	č̣in
e	sčʔ, sč, sčø
e	s-qu(ʔ)
e	č̣i(ʔ)

In "dependent clauses" of a certain type the formants of set II and the formants combined with č are replaced by formants of set I:

tex <u>t</u> -uul-ø sin ...	'when he came ...'
ox <u>t</u> -uul-ø sin ...	'when he comes ...'

o Ø-qaax-Ø t-qʔum-ə-ʔn sin	'he told me to work (in
tuʔn n-kox-o-on {nkxon}	the field)'
at xun tuubə t-ok-Ø siʔ	'there is a pipe (that)
]toks[t-xaqʔ	is in there under it'
xun-tl xaa-ʔ t-kupʔ-Ø peʔne	'there is another house
	(that) is by it'
xoq-əl-o-on {xoqəqon}	'he is sneaking (when)
t-siʔ-ʔ	he goes'
tiin-ən {tinən} t-iʔy-Ø	'she is pregnant (when)
sux	she passes' (a pregnant
	woman is passing by)

However, clauses with the negation miʔn 'not' have formants of set II also when dependent:

tuʔn miʔn ʔʔ-ok-Ø siʔ			'so that water would not
]ʔʔoks[aʔ t-ux			get in there'
qʔum-əl	'to say'	xoq-	'sneak'
tuʔn	'to, so that'	at	'there is'
tuubə	'pipe'	kox-o-ol {kxool}	'to work'
peʔne	'outside'	tiin-ən {tinən}	'pregnant'
t-xaqʔ	'under it'		

Thus, in all these situations the two sets of formants are variant sign expressions, w, n, and cin, for example, are variants; but they are not interchangeable because they are varieties, solidary variants.

The elements of /interlocutor/ are also included in the following expressions:

qen	'I am'
te, Ø	'he is'

qoʔ	'we are'
qke, ø	'they are'
ntiʔn	'I am (in a place)'
taʔ	'he is (in a place)'
(i)toʔ	'we are (in a place)'
(i)teʔ	'they are (in a place)'
čis	'I go'
ciʔ	'he goes'
qoʔs	'we go'
čeʔs	'they go'

After cin 'simultaneity' and ok 'future (assertion)' where the formant for 'non-first singular' is zero, the form of the verb siʔ 'to go' is regular:

lu qen cin ø-siʔ n-waʔ-ʔn	'here I am eating it'
[nwaʔn[	
ma ciʔ n-waʔ-ʔn [nwaʔn[	'I ate it'

However, when the elements of the category /interlocutor/ relate to 'imperative' or 'indicative' of completive forms, then their formants are also expression for 'subject case' and 'object case', for example:

čin	'first singular, object case'
w, n	'first singular, subject case'
ø	'non-first singular, object case'
t	'non-first singular, subject case'

The formant for 'non-first singular, object case' has only

one variant, q, that variant that appears before consonants, because it is here always prefixed to a formant of set I, and the formants of set I all begin with a consonant.

Examples of these were given above, pp. 154-55.

*t3

t3 /Parts of Syllables/ In the expression section of this operation the syllable themes are analyzed into a selected part, manifested as initial, and a selecting part, manifested as final.

I shall not perform this analysis, but simply point out that three types of syllables are found in Mam, as exemplified by the following syllables:

qʔaqʔ	'fire'
qʔa.	'boy'
aqʔ	'vine'

Linearity of the order of elements is a feature of manifestation, and this analysis into initial and final parts of syllables is carried out before the analysis into centrals and marginals in order to make possible the distinction between, for example, toq and tqo or otq.

r3 gives no results.

*t4t4 ʔ_G ⇌ 19 :: ʔ_G ⇌ 20

ʔ_G ⇌ 20 :: {iθ} :: ʔ₁₁ = /centrals/
 {:B} :: ʔ₁₁ = /marginals/
 {:γ}
 {:r}

Tentatively the following elements are registered as
 centrals: ɪ, e, a, o, u, i, e, a, o, u, ɪ, ẽ, ǣ, Ǿ, ũ, ɪ, ẽ, ǣ, Ǿ, ̃, ̃.

Since it is not syllables, but initial and final parts of syllables, that are analyzed into centrals and marginals in the present operation, there are marginals that are derivatives of initial parts of syllables and marginals that are derivatives of final parts of syllables. Eventually these two "sets" of marginals will be reduced, but at present they are still kept apart.

Thus the initial marginals are p, t, k, k, q, ɸ, ʈ, ʈ, ɕ, x, ʂ, ʂ, ʂ, ɹ, m, n, w, y, p', t', k', k', q', ɸ', ʈ', ʈ', ɕ', the final marginals are p, t, k, k, q, ɸ, ʈ, ʈ, ɕ, x, ʂ, ʂ, ʂ, ɹ, m, n, w, y, p', t', k', k', q', ɸ', ʈ', ʈ', ɕ', ʔ.

The only difference between the two categories of marginals is ʔ, which is found only in the category of final marginals.

However, there are a number of examples with the apparent occurrence of ʔ before a central:

člʔit	'a nickname'
çyʔã	'dog'
kwʔa·l	'young'
qnʔe·l	'17th day'
qnʔaʔl	'a tree'
ayʔom	'wait!'
elʔu·l	'to mix'

In the first five examples, ʔ is observed to appear not only before a central, but also after a cluster whose vowel-close member is one of the category of marginals that are never glottalized. The marginals l, m, n, w, y are followed by ʔ as in these examples only when they are also preceded by some other marginal which must be of a certain category, namely of the category of marginals that can be glottalized, p, t, k, q, ʃ, č, ç.

I therefore suggest that the cluster in the examples above is composed of a glottalized marginal and a marginal that can never be glottalized; the ʔ in question is then interpreted as a manifestation of the glottalization-part of the vowel-far marginal:

č'lit	'a nickname'
ç'yã	'dog'
k'wa·l	'young'
q'ne·l	'17th day'
q'naʔl	'a tree'

This analysis is supported by the manifestation of

some forms in which a central between two marginals is latent, i.e. contracts overlapping with zero:

{q'i/øno·l}	]qn'o·l[	'to warp (about weaving)'
q'inp'el		'warping board'
{k'a/ølo·l}	]kl'o·l[	'to tie'
k'alp'el		'belt'
{e'o/ølom}	]el'om[	'board'
ne'o·lom		'my board'
{p'i/øyo·l}	]py'o·l[	'to kill'
np'iy		'I killed him'

Similar examples also with a central that is manifested as zero between two marginals show why the vowel-close marginal must be m, l, n, w, or y in the examples given above.

c'axo·l	]cxo·l[	'to wash' (tr)
k'oso·l	]kso·l[	'to hit'
k'upu·l	]kpu·l[	'to cut'
k'ixi·l	]kxi·l[	'to twine'
t'iso·l	]tso·l[	'to sew'
t'ito·l	]tto·l[	'to shake' (tr)

In this position, preceding, here x, s, p, and t, and in general any marginal but l, m, n, w, y, the glottalization of the first marginal is manifested as zero. In other words, c' and c contract overlapping in this position, and so do k' and k, p' and p, etc.

Thus, in cases where no central can be encatalyzed

between the two marginals, the syncretism between a glottalized and an unglottalized marginal is irresoluble, for example:

ɕ'/ɕqam	]ɕqam[	'incrustation'
ɕ'/ɕxu·ʔx	]ɕxu·ʔx[	'owl'
k'/kčup'	]kčup'[	'a measure'
č'/čxa·x	]čxa·x[	'willow'

The ʔ in the examples ayʔom 'wait!' and elʔu·l 'to mix' is explained analogously, as the manifestation of a ʔ that selects the central of the preceding syllable; in ideal notation aʔyom and eʔlu·l. The additional support for the analysis in this case comes from other forms of the same words, forms in which the central of the first syllable is manifested as zero, and since the glottal stop selects the central, it too is manifested as zero: snʔyo· 'I waited for him', o tyo·y 'you waited for him', snlu· 'I mixed it', and p'aʔn tlu·x 'it can be mixed'.

The following four forms,

ɕ'awã	'he sows'
k'awa·l	'he will sow'
sʔawã	'he sowed'
nʔawã	'he is sowing'

all have some glottalization preceding the first central. In the first two forms, ɕ'awã and k'awã, the glottalization presents no problems; both ɕ' and k' are elements in the

category of initial marginals. I have included them because there is a certain connection between their apparently simple glottalization and the puzzling 2 of the last two forms.

First of all, it will be useful to present the four full paradigms:

čínawā	'I sow'
q'awā	'he sows'
quʔawā	'we sow'
čiʔawā	'they sow'
čínawa·l	'I shall sow'
k'awa·l	'he will sow'
quʔawa·l	'we shall sow'
čiʔawa·l	'they will sow'
šinawā	'I sowed'
sʔawā	'he sowed'
squʔawā	'we sowed'
siʔawā	'they sowed'
nčínawā	'I am sowing'
nʔawā	'he is sowing'
nquʔawā	'we are sowing'
nčiʔawā	'they are sowing'

A comparison of the first and the third of these four paradigms reveals that the third has the same prefixes as the first plus an initial s. It is most obvious in the first person plural, and it comes out particularly clearly

for the non-first person in the singular with verbs that have an initial marginal:

Økup'	'he goes down'
skup'	'he went down'

šin and ši? can be considered contractions of sčin and sči? respectively; and the ? of sʔawā can now be interpreted as the glottalization from ɕ:

sɕ'awā	]sʔawā[	'he sowed'
--------	---------	------------

The same contraction, sɕ]s[, is found irregularly with the verb ɕaax 'to come',

sɕaax	]saax[	'he came'
but: sɕɛʔ	]sɕɛʔ[	'he laughed'

There also happens to be another example of the same phenomenon to support this interpretation:

ma	{š1/Øʕ'ɪ}	]ʕʔɪ[	'he screamed'
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The ? in nʔawā 'he is sowing' is of an entirely different origin. A glottalization before an initial central was found to appear as a signal for "word boundary", p. 56,

nimaʔ	]nimaʔ[	'river'
nim aʔ	]nimʔaʔ[	'much water'

The n in nʔawā is a short variant of the longer form ɕɪ 'simultaneity'.

Thus, nʔawā must be catalyzed to ɕɪ awā, and the ?

found in the uncatalyzed form signals "word boundary".

In addition to the two variants ɕ' and ʔ of the formant for 'non-first singular', there is of course the third variant, ɕ, found with only three verbs:

ma ɕu·l	'he arrived here'
ma ɕiʔy	'he passed'
ma ɕaq'	'he began'

As expected, the form with the prefixed ɕ has no glottalization with these verbs:

sɕu·l	]su·l[	'he arrived here'
sɕiʔy	]siʔy[	'he passed'
sɕaq'	]saq'[	'he began'

As to the form following ɕi or n, the verbs u·l, iʔy, and aq' naturally behave no differently from all the other verbs with an initial central; there is a 2 to signal "word boundary":

nʔu·l	≥	ɕi u·l
nʔiʔy	≥	ɕi iʔy
nʔaq'	≥	ɕi aq'

nʔu·l is catalyzed to ɕi u·l, etc.

However, the apparent prefix k' in the second of the four verb forms I gave p. 165 is glottalized also in the case of these three verbs:

k'u·ləl	'he will arrive here'
---------	-----------------------

k'iʔyə1		'he will pass'
k'aq'əl		'he will begin'

and actually this glottalization is the same signal for "word boundary" that I mentioned in connection with ɕʔ. k is a variant of the adverbial ok 'future (assertion)':

k'awa·1	≥	ok awa·1	'he will scw'
k'u·lə1	≥	ok u·lə1	'he will arrive here'
k'iʔyə1	≥	ok iʔyə1	'he will pass'
k'aq'əl	≥	ok aq'əl	'he will begin'

It is quite possible that the glottalization of ɕʔ in ɕ'awā can be identified historically with the ʔ, signal for "word boundary", but that is irrelevant for the present description.

The apparent cases of ʔ immediately preceding a central have thus all been reduced, and ʔ is still the only marginal that does not appear in the category of initial marginals.

I have pointed out above that the glottalization of pʔ, tʔ, kʔ, kʔ, qʔ, ɕʔ, cʔ, čʔ, and ɕʔ under certain conditions is manifested as ʔ; this is particularly striking in the case of qʔ which--when not in a cluster--is manifested as a post-velar implosive stop, but when it precedes, for example, n, q'naʔ1 'a tree', no trace of the glottalization remains with q, i.e. before the n:]qnʔaʔ1[.

Marginal clusters occur with some frequency in Mam; and in this respect ʔ also differs from the other marginals,

it is the only one that does not enter into any marginal clusters, it does not contract combination with the other marginals. This fact should make it obvious that there cannot in any way be a contrast between, for example, q' and q?.

On the basis of these observations I reduce the glotalized marginals by analyzing them as complex units with two components: a simple marginal and ?.

The complex units p?, t?, k?, k?, q?, q?, č?, č?, and c? cannot be analyzed as ordinary clusters because their two components do not contract combination. ? selects the marginals.

This changes my first tentative analysis into centrals and marginals. Instead of two realized categories, I now find that before mapping all four categories are realized:

{iβ} /l,e,a,o,u,i°,e°,a°,o°,u°,ī,ē,ā,ō,ū,ī°,ē°,ā°,ō°,ū°/
 {iB} /ʔ/, /x,s,š,š,s,l,m,n,w,y/
 {iγ} /p,t,k,k,q,č,č,c/
 {iΓ} /x,s,š,š,s,l,m,n,w,y/, /p,t,k,k,q,č,č,c/

The elements of {iβ} appear only as selected. ? selects both the elements of {iβ} and /p,t,k,k,q,č,č,c/. /x,s,š,š,s,l,m,n,w,y/ select the elements of {iβ} and combine with /p,t,k,k,q,č,č,c/. /p,t,k,k,q,č,č,c/ select the elements of {iβ} and are selected by /ʔ/, but they also combine with /x,s,š,š,s,l,m,n,w,y/ and are therefore also in {iΓ}.

Certain reductions can here be carried out through mapping. According to Rés Rg 56a, "If pre-elements entering

into ... : have substitution to pre-elements entering into {iγ}, they are assigned to {iγ}", p, t, k̄, k, q, ɕ, ɕ̄, ɕ̇ must be assigned to {iγ}; and according to Rés Rg 58a, "If pre-elements entering into {iΓ} have substitution to pre-elements entering into ... {iB}, they are assigned to ... {iB}", x, s, ʂ, ʂ̄, ʂ̇, l, m, n, w, y must be assigned to {iB}. Thus:

{iβ} /i, e, a, o, u, i̇, ė, ȧ, ȯ, u̇, ī, ē, ā, ǝ, ū, ī̇, ē̇, ā̇, ǝ̇, ū̇/
 {iB} /ʔ/, /x, s, ʂ, ʂ̄, ʂ̇, l, m, n, w, y/
 {iγ} /p, t, k̄, k, q, ɕ, ɕ̄, ɕ̇/
 {iΓ}

The elements in {iβ} are operatively called /centrals/, those in {iB} /marginals/, and those in {iγ} /centro-marginals/.

/Centrals/

Reduction ī, ē, ā, ǝ, ū, ī̇, ē̇, ā̇, ǝ̇, and ū̇ are reduced to the corresponding single centrals plus n. Nasalization is the manifestation of syllable final n that follows a central:

t̚skī	'his ear'	t̚skine	'your ear'
tqē	'his leg'	tqene	'your leg'
t̚cā	'his gūisquil'	t̚cane	'your gūisquil'
tp̚ɕō̇	'his beam'	tp̚ɕō̇ne	'your beam'
t̚cū	'his lime'	t̚cune	'your lime'
tsī̇̇	'his corn'	tsī̇̇ne	'your corn'

tsyā·ʔ	'his body hair'	tsya·ʔne	'your body hair'
təð·ʔ	'his stomach'	təo·ʔne	'your stomach'
tʃcū·ʔ	'his zapote pit'	tʃcu·ʔne	'your zapote pit'

Through this manifestation of n, syllable boundaries can now in many cases be established unambiguously. In these examples:

]čīxyaʔ[	'he will look for me'
]čīnxyaʔ[	'let me look for them'

the syllable boundary is assigned as follows:

]čīxyaʔ[	čīn.xyaʔ	'he will look for me'
]čīnxyaʔ[	či.nxyaʔ	'let me look for them'

The period signifies syllable boundary.

The long centrals can be reduced either as centrals plus an element "vowel length", or as geminate centrals.

It appears that the reduction to centrals plus "length" is reasonable in other Mayan languages where "length" appears as a suffix on a par with x and ʔ, and--apparently being a marginal--is manifested as a lengthening of the preceding central whether this central is removed from "length" by another marginal or not.

However, in Mam there are several reasons for preferring the other possible reduction of long centrals, namely to geminate centrals.

Even though ʔ is often manifested in conjunction with the strongly stressed central rather than with the central

or centro-marginal with which it is registered ideally, there is still contrast between V?C and VC? in most situations. Exceptions are:

qʔaqʔ	=	qʔaʔq	'fire'
qʔoqʔ	=	qʔoʔq	'a squash'
kqʔiqʔ	=	kqʔiʔq	'wind'

This is clearly an example of dissimilation.

Lengthening does in fact occur as a sign expression in Mam: ɬax 'pitch pine' t-ɬa--x 'his pitch pine'. However, it occurs not only with the last central of a word, but also with the first central of disyllabic words: ɬeyep [ɬeyep] 'rain cape' t-ɬe--yep [tɬe.yep] 'his rain cape'; and here it is impossible to interpret it as a suffix.

The formants for 'future, indicative' and 'non-future, indicative' could of course be said to be "length" l or l "length" and "length" n or n "length", respectively, for verbs of subgroup 3° and 4°:

pʔiy-o-·l	]pyʔo·l[	'he will kill'
pʔiy-o-l·		
ɬqi·x-sa-·l	]ɬqixsa·l[	'he will dry (it)'
ɬqi·x-sa-l·		

However, this is less appropriate in the case of verbs of subgroup 1° and 5° (possibly due to my segmentation of these verb forms):

pa·t-·1	]pa·təl[	'he will burn (it)'
pa·t-1·		
kʔay-·1	]kʔayəl[	'he will sell (it)'
kʔay-1·		

The manifestation of long centrals resulting from short centrals that are lengthened does not contrast with the manifestation of "simple" long centrals: ngə-·-x 'my pitch pine' and ngə·x 'I came' are identical as to manifestation.

x contracts overlapping with ǝ in the position between a long and a short central; and the long and the short central are then not manifested as two consecutive vowels, but as an extra long vowel:

nko·xoʔn	]nko··ʔn[	'my field'
txa·xil	]txa··l[	'its (animal's) house'

If a central is manifested as vowel length, it would also seem natural that vowel length is analyzed as a central.

On the basis of these various arguments I reduce the long centrals to geminate centrals.

In initial position and immediately preceding a centro-marginal plus ʔ plus a central, the manifestation of u is identical with that of w. They appear to contract overlapping. In the following examples the overlapping is resolvable due to generalization with the possessed form, in which the u is geminated:

ukʔil	]wkʔil[	'cooking pot'
wuukʔil	]wuukʔəl[	'my cooking pot'

It is significant, however, that]wkʔil[is interpreted in a different way by some people, namely as wkʔil, a fact which emerges from the variant possessed form: nwkʔil 'my cooking pot'. The formant for 'first singular' with nouns is of course w before centrals and n before marginals and centro-marginals.

Since u has been registered as a central and w as a marginal they do not seem to contract commutation, and based on the substitution between the two in the example given above, I propose to reduce u and w to variants.

According to Rés Rg 57a, "If pre-elements entering into {iɤ} have substitution to pre-elements entering into {iB}, both are assigned to {iɤ}." I transfer u-w to functional category {iɤ}. The choice of variant depends upon whether the invariant has central or marginal function in the given cases. "Syllable boundaries" must be indicated and are here represented by a period.

Central function:	us		'a fly'
	suuʔx		'woman'
	u.kʔil		'cooking pot'
Marginal function:	xaau		'go up'
	uinaq	{wnaq}	'man'
	uatan	{wtan}	'to sleep'
	ukʔ.il		'cooking pot'

Both interpretations: u.kʔaal]wkʔaal['to drink'
 ukʔ.aal
 u.pʔsaal]wpʔsaal['listen!'
 upʔ.saal

I shall continue to use u for the central variant and w for the marginal variant.

One might speculate that a similar reduction should be possible with respect to i and y. However, these two elements nowhere engage in a relationship similar to the one noted for u-w in the word ukʔil, and besides, marginal and central variants could not be assigned unambiguously if both u-w and i-y had two variants, cf.:

*ɕiu]ɕyu[
]ɕiw[

Commutation

i ; e	iil	'sin'	eel	'he went out'
	twiis	'his rosin'	twees	'his pants'
	tpʔil	'his name'	tpʔee	'his road'
i ; a	pʔiɕʔ	'sand'	pʔaɕʔ	'20th day'
	xil	'animal'	xal	'ear of corn'
	imx	'breast'	amx	'skirt'
i ; o	siix	'hoarse'	soox	'corn canes'
	niʔx	'finely ground'	noʔx	'6th day'
	siip	'tick'	soop	'sauce'

e ; a	pʔee	'road'	pʔaa	'gopher'
	kʔeč	'13th day'	kʔač	'cleared up'
	qʔeʔn	'liquor'	qʔaʔn	'bridge'
e ; o	peʔx	'barren'	poʔx	'lazy'
	neeš	'calf'	nooš	'devil'
	çʔeʔy	'emaciated'	çʔoʔy	'strong'
a ; o	xaax	'a measure'	xoox	'crow'
	pʔaʔn	'good'	pʔoʔn	'gutter'
	laas	'braid'	loos	'clay cup'

Syncretisms e and a contract overlapping under the dominance of a following y combined with a preceding q(?) or k(?). The manifestation of the syncretism is an implication in which a implies e:

kʔayel	{kʔe/ayel}	]kʔeyel[	'to sell', cf. <u>kʔaʔe</u> , <u>kʔašxeel</u> 'goods for sale'
skʔayel	{skʔe/ayel}	]skʔeyel[	'to be stingy' cf. <u>skʔaa</u> 'stingy'
	{qʔe/ay}	]qʔey[	'rotten'
	{qe/ay}	]qey[	'agree to do'

The commutation between e and a is not suspended if the central is accompanied by ʔ:

ma qaʔyəs	'it got bad'
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A syncretism of all five simple centrals is very frequent; its manifestation is a fusion. It is dominated by a

geminate central in the preceding syllable from which it is removed by only one marginal which is not ? or by one centro-marginal. The unresolved syncretism is represented by a.

nɛɛyep	{nɛɛyep}	'my rain cape'
nɛiɪnapʔ	{nɛiɪnəpʔ}	'my marimba'
nɛʔoolom	{nɛʔooləm}	'my board'
wuukʔil	{wuukʔəl}	'my cooking pot'
waaqʔun	{waaqʔən}	'my work'

The syncretism is resolved in these cases through generalization with unpossessed forms of the same words with a short or single central in the first syllable:

ɛeyep	{ɛyep}	'rain cape'
ɛinapʔ	{ɛnapʔ}	'marimba'
ɛʔolom	{ɛʔlom}]ɛlʔom[	'board'
ukʔil	{ukʔil}	'cooking pot'
aqʔuntl	{aqʔuntl}	'work'

This syncretism is also dominated by a number of sign expressions--both roots and suffixes--and is then mostly i-resoluble:

{nqʔootex}	'my corn drink'
{wiɪqəɛ}	'my burden'
{pʔiisən}	'he thinks'
{xiikən}	'straight'
{puuɛən}	'soft'
{ɛpaatən}	'barefoot'

[čeqəqen]	'easy to degrain'
[tʔapʔəpʔan]	'stammering'
[putətun]	'fluttering'
[tɕʔuumeniil]	'its softness'
[ɕuqnɛxə]	'he sniffles'
[liɕnɛxə]	'he blinks'
[nakʔnɛxə]	'he squeaks'
[taakʔəxəyiil]	'its newness'

Each of the four centrals and the central variant of u-w contracts overlapping with zero. (In the following the central variant of u-w is included on a par with the centrals in discussions about the centrals as a category.) In certain cases--as for example in the first word below--the overlapping is contracted by ə and zero. Like all overlappings with zero this one is manifested as an implication. ə is implied by each of the four centrals and the central variant of u-w.

There are various sources of dominance: a central in the following syllable which is not a syncretism of all centrals:

iqəɕ	[iqɕ]	'burden'
ɕeyep	[ɕyep]	'rain cape'
čínapʔ	[čnapʔ]	'marimba'
kolopʔx	[klopʔx]	'blouse'
ɕalee	[ɕle]	'lie on the side'
pičʔee	[pčʔe]	'be with the head down'
pʔunee	[pʔne]]pnʔe[	'lie like a dog'

cʔaxool	{cʔxool}	'to wash' (tr)
xupuul	{xpuul}	'to close'
xiɬʔool	{xɬʔool}	'to tie'

If the central is geminate in both syllables, then one of the centrals of the first syllable contracts overlapping with zero; word final geminates are also shortened through latency of one of the centrals:

sleekee	{sleke}	'stand on one leg'
ɬʔiikee	{ɬʔike}	'stand on the tip'
laaɬʔee	{laɬʔe}	'be stacked' (ab. paper)
toolee	{tole}	'lie cylindrically'
yuutʔee	{yutʔe}	'be frightened, shrunk'

The second central of a geminate is latent under the dominance of a following m, n, and word final t:

ɬuyuum	{ɬuyum}	'grab it!'
	]ɬqam[	'incrustation'
ɬuyuun	{ɬyun}	'he grabs'
	]ɬun[	'lime'
ɬuyueet	{ɬyet}	'was grabbed'
	]ɬʔut[	'drop'
	]spit[	'wart'
	]xot[	'handful'

The second a of the geminate aa does not contract overlapping with zero under the dominance of a following, word final t:

msaat	]msaat[	'deer'
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qaat]qaat['burp'

Those instances of dominance are the most frequent and the most regular. Others are:

čiinapʔel	[čiinpʔel]	'to play the marimba'
nkoolopʔel	[nkoolpʔel]	'my blouse'
tspʔaakesel	[tspʔaksel]	'steam'
tšaaxanəl	[tsaxnəl]	'sin'

Here the central that is preceded by a geminate central and followed by ə is latent.

The initial central of certain words is latent when followed by a syllable with a central which is not ə:

aqʔol	[qʔol]	'to give something'
iqʔil	[qʔil]	'to take something'

Other verbs keep the initial central in some forms and drop it in other forms, for example:

činəpʔiin	]činəpʔin[	'I hear'
činəpʔiil	]činəpʔiil[	'I shall hear'
təpʔiʔnə	]tpʔiʔnə[	'heard by him'
təpʔii	]tpʔi[	'he hears it'

and the initial central of awaal 'to sow' never contracts overlapping with zero.

In the following examples there is also overlapping with zero:

saʔeet	]seʔt[	'was dried'
suuʔeet	]seeʔt[	'was wiped'
çooʔeet	]çeeʔt[	'was fried'
waʔee	]weʔ[	'stand upright'
yoʔee	]yeʔ[	'hang'

It appears to be the first central that is latent, and the 2 is then manifested after the second central. Perhaps the following irregular passive forms (cf. p. 135),

]kʔaʔt[	'was bewitched'
]waaʔt[	'was eaten'
]yaaʔt[	'was squandered'
]pʔaʔt[	'was bitten off'

have the et variant of the formant for 'passive 1' rather than the eet variant: kʔaʔet]kʔaʔt[, etc.

The only central that does not contract overlapping with zero under the dominance of a following 2 plus central is 1:

čiʔool	'to eat meat'
pʔiʔaal	'to mention'
tčiʔaal	'its sweetness'
čiʔaas	'get sweet'
tšiʔooʔp	'his buttocks'

In other words, 2 appears between two centrals only if the central preceding the 2 is 1.

Phonetic Stress The position of the phonetic strong stress can now be stated quite simply: it occurs in each word on the last syllable containing a central that is not a or a latent central,

	{ <u>e</u> /øyep}	]éyép[	'rain cape'
	{n <u>e</u> eyep}	]n <u>e</u> éyép[	'my rain cape'
	{laa/øne}	]lané[	'lie down'
laanpʔaʔn		]lanpʔáʔn[	'put down'
nqʔootəx		]nqʔóotəx[	'my corn drink'
taakʔəxəyil		]takʔəxəyil[	'its newness'

Free Analysis Overlappings and other features relevant to the free analysis of the category of centrals:

e and a contract overlapping.

e and i dominate an overlapping between k̄ and k in the "k̄" local language (cf. p. 197).

e and i dominate an overlapping between k and y (p. 191).

When followed by ʔ plus another central, i differs from the other centrals by not contracting overlapping with zero, cf. above.

Certain sign expressions have two variants differing only as to the central:

)kʔis, kʔas(	'awaken'
)k̄im, k̄am(	'die'
)wat, wet(	'sleep'
)k̄ix, k̄ax(	'twine'

The configuration of the category of centrals is based on the syncretisms and the instances of dominance here mentioned and also on the other considerations presented and on facts of substance:

	:a	:A
:a	i	o
:A	e	a

/Marginals/

/2/

Syncretisms 2 contracts overlapping with zero when it is removed from either a following or a preceding central which may not be a or a latent central. It contracts the overlapping only when it is removed by a centro-marginal or one of the following marginals x, s, ʃ, ʃ̃, ʃ̄ plus a when the 2 follows the central. When the 2 precedes the central, there may be a latent central between 2 and the centro-marginal or marginal.

siipeʔn	]siipən[	'distributed'
{ʔʔ/ʔi/ʔsool}	]tsool[	'to sew'
{ʔʔ/ʔpee/ʔt}	]ʔpet[	'lost'

Here 2 is removed from ii by pə, from oo by i/ʔs, and from ee by p. Other examples:

paatəʔn		]paatən[	'burned'
xookəʔn		]xookən[	'dug'
tooqəʔn		]tooqən[	'broken'
əəʔəʔn		]əəʔən[	'sailed'
xaačəʔn		]xaačən[	'taken off'
liisəʔn		]liisən[	'shredded'
čaašəʔn		]čaašen[	'torn'
loošəʔn		]loošen[	'taken off'
suusəʔn		]suusen[	'blown (flute)'
kʔupuul	{kʔ/øu/øpuul}	]kpuul[	'to cut'
čʔitool	{čʔ/øi/øtool}	]čtool[	'to shake'
kʔosool	{kʔ/øo/øsool}	]ksool[	'to hit'
čʔaxool	{čʔ/øa/øxool}	]čxool[	'to wash'
čʔaqeet	{čʔ/øa/øqet}	]čqet[	'exact'
	{tʔ/øsiis}	]tsiis[	'cypress'
	{kʔ/øčupʔ}	]kčupʔ[	'a measure'
	{čʔ/øčeʔw}	]ččeʔw[	'a cold'
qiisəʔ		]qiisə[	'our potatoes'
qpʔuuçəʔ		]qpʔuuçə[	'our corn dough'
qčookeʔ		]qčooke[	'our trough'

When x contracts overlapping with zero, it does not dominate the overlapping between 2 and zero:

nkooxoʔn	{nkoox/øəʔn}	]nkoooʔn[	'my field'
pʔuuxəʔn	{pʔuux/øəʔn}	]pʔuuuʔn[	'hit'

When selecting an unsyncretized central, 2 contracts overlapping with zero under the dominance of another 2 which

selects a centro-marginal that follows the first 2 immediately:

yooʔpʔən	{yooʔ/øpʔən}	]yooʔpʔən[	'hung'
	{sooʔ/øpʔən}	]sooʔpʔən[	'bog'
	{tuuʔ/øqʔ}	]tuuʔqʔ[	'fat'
	{swooʔ/økʔ}	]swooʔkʔ[	'stiff'

The syncretism is resolvable in the first example and irresolvable in the last three.

Manifestation 2 is not always manifested in conjunction with the central or centro-marginal it selects:

pooləʔn	]pooʔlən[	'fried'
nimeʔn	]niʔmən[	'fulfilled'
qanəʔn	]qaʔnən[	'asked'
pʔuuyəʔn	]pʔuuʔyən[	'piled up'
kʔeleel	]kʔlʔeel[	'to pasture'
kʔamool	]kmʔool[	'to receive'
çʔinool	]çnʔool[	'to pound'
pʔiyool	]pyʔool[	'to kill'
qxaaleʔ	]qxaaʔlə[	'our (excl) corn'
qçqameʔ	]qçqaʔmə[	'our (excl) incrustation'
qçunəʔ	]qçuʔnə[	'our (excl) lime'
qpaayeʔ	]qpaaʔyə[	'our (excl) bags'
qseewəʔ	]qseeʔwə[	'our (excl) breath'
çʔlak	]çlʔak[	'a bird'
qʔnaʔl	]qnʔaʔl[	'a tree'

The examples show that when m, n, l, y, or the marginal variant of u-w separates ? from a preceding or following central which may not be ə or latent, then the ? is manifested in conjunction with the central. If the central follows ?, there may be a latent central between the ? and the marginal (m,n,l,y,w); and if the central precedes the ?, there is a ə between the ? and the marginal.

/x.s.š.š̃.s.l.m.n.y/

Reductions No reductions of the elements in this category seem possible. Since both s, š̃, and ş occur in clusters:

syumən	'blurry'
š̃yaapʔ	'meager sheep'
şyaʔn	'body hair'

neither š̃, š̃̃, nor ş can be reduced to a combination of s and y.

The two categories of marginals, the initial marginals and the final marginals, are reduced pairwise in such a way as to obtain the simplest correspondence with substance:

x	x
s	s
š̃	š̃
š̃̃	š̃̃
s̃	s̃
l	l
m	m
n	n
y	y

Commutation

Initials:

s ; š ; s ; l	saq	'white'
	šaq	'toy'
	saq	'rock'
	laq	'bowl'
x ; l ; y	xaaʔ	'house'
	laaʔ	'nettle'
	yaaʔ	'grandmother'
y ; s ; l	yaapʔ	'sick'
	saapʔ	'strainer'
	laapʔ	'dislike'
š ; s	šin	'speckled'
	sin	'spider'
x ; s	xil	'animal'
	sil	'a plant'
n ; l	nooš	'devil'
	looš	'chipped'
y ; m	yoš	'twin'
	moš	'oats'

Finals:

š ; s ; s	mooš	'blind'
	moos	'non-Indian'
	moos	
š ; l	pooš	'scarecrow'
	pool	'cracklings'
m ; s	um	'a sip'
	us	'a fly'
m ; l	kʔum	'ayote'
	kʔul	'plant'

n ; l	xun	'one'
	xul	'hole'
s ; x	txoos	'his egg'
	txoox	'his crow'
x ; n	pox	'pus'
	pon	'arrive'
x ; ʃ	kʔoʔx	'bald'
	kʔoʔʃ	'a cup'

Syncretisms x contracts overlapping with zero in the position between a geminate central and a single central:

koxoʔn	{kxoʔn}	'field'
tkooxoʔn	{tkoooʔn}	'his field'
noox		'it is full'
nooxəl	{noool}	'it will be full'
ʔqʔaax		'it gets cooked'
ʔqʔaaxəl	{ʔqʔaaal}	'it will get cooked'
npʔux		'I hit it'
npʔuuxən	{npʔuuun}	'I am hitting'

The overlapping between x and zero is also dominated by the combination of a preceding central selected by ʔ and a following ə:

ʔaʔx		'ashes'
tʔaʔxəl	{tʔaʔl}	'its inherent ashes'
uʔx		'paper'
tuʔxəl	{tuʔl}	'its inherent paper'

suuʔx		'woman'
tsuuʔxəl	{tsuʔl}	'his wife'
čuʔx		'flesh'
tčuʔxəl	{tčuʔl}	'his own flesh'

y contracts overlapping with zero in the position between x and ə:

čeex		'horse'
tčeexye	{tčeexe}	'your (sg) horse'
ploox		'weak'
plooxyes	{plooxəs}	'he becomes weak'
xiiʔx		'viscous'
txiiʔxyel	{txiiʔxəl}	'its viscosity'

The y in the examples forms part of certain suffixes. These suffixes all have at least two variants: ə(?), yə(?) "one of the two parties" (p. 153f), əs, yəs 'vertitive' (p. 219), and əl, yəl "ness" (p. 234). The variants with y occur suffixed to words ending in a central with or without ʔ:

qman		'our (incl) father'
qmanəʔ	]qmaʔnə[	'our (excl) father'
qxaa		'our (incl) house'
qxaayeʔ	]qxaaʔyə[	'our (excl) house'
puus		'moldy'
puusəs		'it gets moldy'
kʔaa		'bitter'
kʔaayəs		'it gets bitter'

čaʔs	'green'
tčaʔsəl	'its greenness'
mee	'dumb'
tmeeyəl	'his dumbness'
slooʔ	'thin'
tslooʔyəl	'its thinness'

Thus, these variants with y justify the assumption of a latent y in the first quoted examples. The reason for postulating the presence of y not only after a central, but also after x is that x in these forms does not contract overlapping with zero in spite of the fact that it seems to occur between a geminate central and e. Compare the following examples:

t-aʔ-əl	]taʔl[	'its inherent water'
t-qaʔ-yəl	]tqaʔyəl[	'its badness'
t-čaʔx-əl	]tčaʔl[	'its inherent ashes'
t-čaʔx-yəl	]tčaʔxəl[	'his baldness'

y also contracts overlapping with the syncretism k̄/k under the dominance of a preceding single unsyncretized i or e and a ʔ. This syncretism is an implication in which k̄/k implies y; the ʔ is manifested in conjunction with the i or e:

čemeḱ/kʔ	{če/ømeḱ/kʔ/y}	]čmeʔy[	'turkey cock'
nčeemeḱ/kʔ		]nčeeʔmæk[	'my turkey cock'
čikʔ	{čik̄/kʔ/y}	]čiʔy[	'blood'
nčikʔeel	{nčī/økʔeel}	]nčkʔeel[	'my blood'

sikʔpʔəl	-[sik/kʔ/ypʔəl]	]siʔypʔəl[	'part of a loom'
sikʔool	{si/økʔool}	]skʔool[	'to pick out'

There are many examples in which this syncretism is not resolvable. In the simple word for 'blood',]ɕiʔy[, the syncretism is resolved through generalization with nɕikʔeel]nɕkʔeel['my blood'. However, there is another variant of the possessed form: nɕiliʔy 'my blood', in which the i is lengthened, and on the basis of this form the outcome of the resolution must be that y is found ideally. This is the only example of y found to occur ideally in place of the syncretism k/k/v.

i is latent when followed by tl:

xun xil		'an animal'
xun xiltl	]xiltl[	'another animal'
ma ɕuul		'he arrived here'
ma ɕuultl	]ɕutl[	'he arrived here again'

In the last example both i and u contract overlapping with zero, and I have mentioned (p. 180) that the second central of a geminate is latent under the dominance of a following, word final t; however, u is here not followed by a t. This problem is not solved through ordered rules, but by stating the instances of dominance of the syncretism central/zero more precisely. Thus, the second of two centrals contracts overlapping with zero under the dominance of a following optional latent i and t: $v/\emptyset \longleftrightarrow (i/\emptyset)t$.

Both m and n appear initially, finally, and medially:

maax	'cornstalks'	naax	'disappear'
kim	'die'	sin	'spider'
čam	'sediment'	čkan	'a pot'
nəiimən	'my gourd dipper'	qiinən	'draw taut'

However, they both dominate the latency of one central in a preceding cluster of two centrals; and there are occasional traces of what could be an overlapping between n and m:

pon	'arrive'	poməl	'will arrive'
pin	'thick'	tpiiʔməɫ	'its thickness'
tin	'her breast'	imx	'breast'
tan	'her skirt'	amx	'skirt'
tipən	'his strength'	tipəmaal	'his strength'
ʔʔuʔn	'skin'	tʔʔuʔməɫ	'its skin'
lekən	'shade'	tslekəmaal	'its shadow'
qʔiinən	'rich'	tqʔiinəmaal	'his richness'

I can offer no analysis of this behavior of n and m. For every one of the examples quoted above, I can give three or more examples with no alternation. Similar, but not the same, vacillations between n and m are found in other Mam dialects, and I expect that evidence from a number of dialects will support some common analysis, but for the time being I must consider the problem one of sign expressions.

There may possibly be a third nasal marginal manifested by nt. It could also be interpreted as a third manifestation of the nasal marginals:

čkint	'deaf'	cf. čkinpʔe	'become deaf'
qʔent	'yellow'	cf. tsqʔnaal	'egg yolk'
paʔnt	'a bird'		
pʔunt	'sugar cane'		
ččint	'quail'		
lant	'wool'		
pint	'colored'		
čičint	'4th day'		
aqʔent	'a table'		
pʔaqmant	'elder tree'		
puʔnt	'loose'		

t appears as a connective in the clusters nx and nl:

qanx	]qantx[	'asked'
qanl	]qantl[	'to ask'

However, since there seem to be no arguments against treating nt as a cluster, I have done so.

Free Analysis The analysis has so far given few relationships on which to base the configuration of the category. The following syncretisms are relevant:

v/ø	→	m, n
y/ø	→	x
y/č/k		
x/ø		
l/ø		

s, s, š, s, x (ʔ/ø
 s, s, š, s (t/ʔʔ/čʔ/čʔ/cʔ

→ signifies is dominated by and ← signifies dominates.

The following sign expressions vary with respect to one marginal of the category here in question:

)ay, aq(	'wail'
)siip, šiip(	'offer'
)kʔaš, kʔay(	'sell'
)pooš, pooy(	'dangly'
)xiip, qiip(	'resist'
)čey, čeq(	'degrain'
)pʔuʔš, pʔuʔy, pʔuʔq(	'ragged'
)pʔiy, pʔiq(	'slaughter'

The suggested configuration is purely speculative:

	ia	iA	iΓ ₂
iβ	š	y	
iB	s	l	
iγ:	š	m	
iΓ	s	n	
iΓ ₂			x

In Mam, clusters of marginals are of little significance for the analysis. The formation of clusters imposes no categorization or restrictions on the marginals. I refrain from presenting charts and analyses of the clusters

since the results are meager.

This same lack of restrictions is also found for combinations of initial marginals with final marginals.

/Centro-marginals/

Commutation

Initials:

c ; t ; k̄ ; w ; q	cuul	'blister'
	tuul	'he comes'
	kuul	'they come'
	wuul	'I come'
	quul	'we come'
w ; k	woof	'a constellation of stars'
	koof	'gift'
p ; ɸ	poɸ	'hard, untender'
	ɸoɸ	'soiled'
k ; p	kox	'in four days'
	pox	'pus'
k̄ ; ɸ	kax	'remain'
	ɸax	'pitch pine'
p ; ɸ	paakʔ	'serving spoon'
	ɸaakʔ	'skinny'
p ; c	pin	'thick'
	ɸin	'girl'
c ; ɕ	cun	'lime'
	ɕun	'throat'

Finals:

ɬ ; k	ɬoɬ	'soiled'
	ɬok	'rattle'
p ; k ; q	ɕup	'gizzard'
	ɕuk	'barely missing contact'
	ɕuq	'"hypothetical possibility"'
t ; k	ncʔut	'my drop'
	ncʔuk	'my elbow'
ɕ̥ ; k	loɕʔ	'sticky'
	lokʔ	'root'
w ; t	qaaw	'mew'
	qaat	'burp'
w ; q	ʃeew	'a mushroom'
	ʃeeq	'blue jay'
k ; q	tʔaʔk	'well made'
	tʔaʔq	'wet'

Syncretisms t contracts overlapping with ɬʔ, ɕʔ, ɕ̥ʔ, and ɕʔ under the dominance of a following s, ʃ, ʃ̥, or ʃ̣:

ɕ̥ʔeseel	]tseel[	'to borrow food'
ɬʔisool	]tsool[	'to sew'
	]tsiis[	'cypress[

ḳ - k ḳ and k contract overlapping in syllable final position and under the dominance of a following e or i, a marginal or a centro-marginal. In general, a first examination of the occurrence of ḳ and k can give the impression that they are variants. ḳ seems to occur primarily initially, in the

environments of either o or a plus either q, x, or ʔ:

kāaʔ	'grindstone'	cf. <u>tkaa</u> 'her grindstone'
kax	'remain'	
kāaxə	'four'	cf. <u>kox</u> 'in four days'
kāaʔwnəq	'forty'	
kāʔx	'sky'	
kāq	'red, hot'	
kāqʔ	'guava'	
skaq	'colored'	
kooq	'8th day'	
qʔen-kooq	'thunder'	
(t)kqil	'all'	
kqʔiqʔ	'wind'	
kxax	'willow'	
kʔax	'lazy'	
kʔax	'pinole'	
kʔaq	'flea'	
kʔqač	'itch'	
kʔaʔ	'witchery'	
skaqʔəx	'fingernail'	
kʔixiil	'to twine'	
kʔaax	'string'	

However, there are also examples of k occurring in some of those environments:

kaʔč	'woman-like'
kaʔw	'a bird'
tkox	'he worked the land'
kooʔ	'rooster'
kox	'in four days'
tkʔaʔ	'his drink'
kʔaʔs	'goods for sale'
kʔaʔs	'ceiling'

kʷoox	'mask'
kʷoʷx	'bald'
kʷoʷʃ	'gourd cup'

Furthermore, k̄ is formant for 'non-first plural' and by virtue of this fact it is possible to show that k̄ and k contract commutation:

kan	'cramp'
k̄an	'their skirts'

Thus, in certain cases it is possible to resolve the syncretism between k̄ and k which is dominated by a following i, e, marginal, or centro-marginal, namely when the k̄/k can be recognized as the mentioned formant:

k̄iɪʷx	{k̄/k̄iɪʷx}	'at them'
k̄in	{k̄/k̄in}	'their breasts'
k̄iɪl	{k̄/k̄iɪl}	'their sin'
k̄čook	{k̄/k̄čook}	'their trough'
k̄qen	{k̄/k̄qen}	'their legs'
k̄pʷii	{k̄/k̄pʷi}	'their name'
k̄ɛʷiʷ	{k̄/k̄ɛʷiʷ}	'their mouth organ'

The syncretism can also be resolved in the words {k̄/k̄im} 'die' and {k̄/k̄ʷisx} 'awakened', as k̄im and kʷisx through generalization from the unambiguous forms k̄amək 'death' and kʷaasəl 'to awaken'.

The above discussion of k̄ and k has been based exclusively on the local language that I have till now only mentioned as "k̄".

The other local language, which I have called "č", differs from "ĸ" in having a clear contrast between ĸ and k everywhere initially, but also by having no contrast between ĸ and č initially.

Thus it is necessary to recognize two special systems for the two local languages and a general system whose inventory will be identical with that of "ĸ" because it is larger than the inventory of "č", and in which syncretisms are resolved through generalizations from both local languages:

<u>"ĸ"</u>	<u>"č"</u>	<u>general system</u>	
kan	kan	kan	'cramp'
kox	kox	kox	'in four days'
kaq	ča ^h q	kaq	'red, hot'
ko ^h oq	čo ^h oq	ko ^h oq	'8th day'
[k/kim]	čim	kim	'die'
ka ^h mək	ča ^h mək	ka ^h mək	'death'
k/kiw	či ^h w	kiw	'hard'
k/ke ^h yəl	če ^h yəl	ke ^h yəl	'to see'
t ^h k/kiw	t ^h či ^h w	t ^h kiw	'cocoa'
k/kmee ^h	čmee ^h	kmee ^h	'15th day'
t ^h k/k ^h ii	t ^h č ^h ii	t ^h k ^h ii	'he does not want'
k/k ^h eleel/	č ^h eleel	k ^h eleel	'to pasture'
k/ki ^h	ki ^h	ki ^h	'fish'
k/kit	kit	kit	'chick'
k/ki ^h ç	ki ^h ç	ki ^h ç	'unkempt'
š ^h k/kinp ^h əx	š ^h kinp ^h əx	š ^h kinp ^h əx	'ear'

s ^h k/kee	skee	skee	'suffice'
s ^h k/kex	skex	skex	'pair of corn cobs'
{k ^h /kʔisx}	kʔisx	kʔisx	'awakened'
k ^h /kʔeč	kʔeč	kʔeč	'13th day'
uk ^h /kʔil	ukʔil	ukʔil	'cooking pot'
tk ^h /kʔiç	tkʔiç	tkʔiç	'its thickness'
čiʔl	čiʔl	čiʔl	'basket'
čep	čep	čep	'crawfish'
čooqʔ	čooqʔ	čooqʔ	'a tree'
čaʔs	čaʔs	čaʔs	'green'

k̄ and k contract overlapping in final position. The syncretism is manifested by k:

sikʔpʔel	{sik ^h /kʔpʔel}	'part of a loom'
sikʔool	]skʔool[	'to pick out'
čikʔ	{čik ^h /kʔ}]čiʔy[	'blood'
tčikʔeel	]tčikʔeel[	'his blood'

A syncretism of k̄/k and y was discussed

In "č" there is no such syncretism:

sikʔpʔel	'part of a loom'
sikʔool	'to pick out'
čikʔ	'blood'
tčikʔeel	'his blood'

Since there is commutation between k̄ and k, they cannot be reduced to variants, but it might be possible to analyze k̄

as a cluster of k and y. There are initial clusters py, ty, and qy:

pyoos	'a mushroom'
tyuʔɛ	'his scar'
qyaaʔ	'our grandmother'

Initial k̥ contrasts with ky only in uncatalyzed utterances:

kyooləl	'he will speak'
kyɛʔool	'she will wring (it)'
kyaaqəl	'he will joke'

which are catalyzed to:

ok yooləl
ok yɛʔool
ok yaaqəl

The analysis of k̥ as a cluster, ky, is not supported by manifestation. When a centro-marginal selected by 2 clusters with y, the 2 is manifested not as a glottalization of the centro-marginal, as it is when the centro-marginal appears alone, but as 2 adjacent to the central:

	{pʔi/ɸyool}	]pyʔool[	'to kill'
cʔyan		]cyʔan[	'dog'

but in the case of k̥ʔ, the 2 is manifested as a glottalization of the centro-marginal, kʔax]kʔax['lazy', etc.

Based on this feature of manifestation and on the somewhat "irregular" ky-cluster found in the uncatalyzed

verb forms I decide not to reduce k̄.

Reductions The elements q̄, č̄, č̃, and q̇ cannot be reduced to clusters of ts, tʃ, tš, and tɕ respectively, because there is commutation between the simple elements and the clusters:

tʃik	'his rabbit'
čikʔ	'blood'
tšooqʔ	'her water pot'
čooqʔ	'a tree'
tsuul	'his mushroom'
cuul	'blister'
tseeʔ	'he will do it'
qeeʔ	'tree'

The initials and the finals are now reduced to one category in the way that results in the simplest correspondence with substance:

<u>"k"</u>		<u>"č"</u>	
p	p	p	p
t	t	t	t
q	q	q	q
q̇	q̇	q̇	q̇
č̄	č̄	č̄	č̄
č̃	č̃	č̃	č̃
c̣	c̣	c̣	c̣
u-w	u-w	u-w	u-w
k	k̄/k	k	k
k̄			

Manifestation When w follows a centro-marginal with ʔ, it is manifested as pʔ:

čʔwis]čpʔis['sour sop'

whereas pʔ is manifested as wʔ when it follows k:

kupʔeel {-ku/ɸpʔeel-}]kwʔeel['he will go down'
kapʔaapʔ {-ka/ɸpʔaapʔ-}]kwʔaapʔ['in two years'

Free Analysis In the case of the category of centro-marginals I have arrived at even less on which to base the free analysis than with the marginals:

t/ɕʔ/čʔ/čʔ/c } s, ʃ, š, ʂ

k/k, k/k/y

t { central/zero

)ay, aq(	'wail'
)čey, čeq(	'degrain'
)pʔiy, pʔiq(	'slaughter'
)pʔuʔɕ, pʔuʔq(	'ragged'
)lačʔ, lakʔ(	'cling'
)šeeew, šeeeq(	'blue jay'
)ɕʔuup, čʔuup(	'pointed'
)xiip, qiip(	'resist'
)ɕi, ši(	'say'

The following configuration is therefore as tentative

as was the one for the marginals:

	ia	iA
ia	ʃ	t
iA	ʧ	q
iβ	č	ķ
iB	c	k
iΓ	p	u-w

74 7γ ↗ 19 :: 7γ ↗ 20

7γ ↗ 20 :: {iβ} :: n711 = /centrals/
 {iB} :: 711 = /marginals/
 {iγ}
 {iΓ}

The analysis in the present operation divides the content themes into centrals and marginals. In the content the marginals correspond to derivational elements and the centrals to radicals.

The centrals are registered in functival category {iβ} because they are selected by the marginals:

ķim 'die'
 ķim-sa- 'kill' (cause to die)

sa is the sign expression for a /derivative/ called 'causa-

tive'.

The verbs, which were separated out as nexus connectives in operation v10 and have been carried through the analysis, are in the present operation found to have substitution to elements of functional category {iβ}.

The category of /centrals/ is unrestricted and therefore it does not have to be subjected to free analysis.

/Derivatives/

The category of /marginals/ or /derivatives/, on the other hand, is restricted; and in the following I shall discuss its elements and their sign expressions one by one.

'Non-possession' Nouns are basically either possessed or not possessed. There is some correspondence between this basic property of the nouns and their manifestation. Thus, nouns for body parts, relatives, and personal belongings, all of which are naturally connected with some owner, are basically possessed. They are modified by the derivative 'non-possession' when they refer to the object more generally or abstractly, and they are of course then not selected by the category /interlocutor/.

The sign expression for 'non-possession' has several variants, ypʔex/pʔex, pʔx, and x/?, each solidary with a unit of content present in one class of nouns.

The variant that is used with nouns indicating body parts, relatives, and a few pieces of clothing or jewelry

is ypʔex after i, e(?), a(?), o(?), or the central variant of u-w(?), and pʔex elsewhere:

ɕii-ypʔex	'mouth'	n-ɕii	'my mouth'
twiɕ ee-ypʔex	'tooth'	twiɕ w-ee	'my tooth'
xeeʔ-ypʔex	'tail'	n-xeeʔ	'my tail'
wiʔ-pʔex	'head'	n-wiʔ	'my head'
čʔek-pʔex	'knee'	n-čʔek	'my knee'
muus-pʔex	'navel'	n-muus	'my navel'
suukʔ-pʔex	'rib'	n-suukʔ	'my rib'
saapʔ-pʔex	'shoulder'	n-saapʔ	'my shoulder'
skʔaaw-pʔex	'chin'	n-skʔaaw	'my chin'
qen-pʔex	'leg'	n-qen	'my leg'
naš-pʔex	'left hand'	n-naš	'my left hand'
skʔot-pʔex	'bird's foot'	t-skʔot	'its foot'
ɕuu-ypʔex	'mother'	n-ɕuu	'my mother'
yaaʔ-ypʔex	'grandmother'	n-yaaʔ	'my grandmother'
xiiʔ-pʔex	'son-in-law,	n-xiiʔ	'my son-in-law,
	parent-in-law of man'		my parent-in-law'
man-pʔex	'father'	n-man	'my father'
smlqʔapʔ-pʔex	'ring'	n-smlqʔapʔ	'my ring'
coʔw-pʔex	'blanket'	n-coʔw	'my blanket'
suʔt-pʔex	'kerchief'	n-suʔt	'my kerchief'
kwenč-pʔex	'necklace'	n-kwenč	'my necklace'

The nouns of the last two examples also appear with another variant of the suffix for 'non-possession', x, which is used with nouns for pieces of clothing. There are three nouns that take pʔex but do not semantically fit into this

class of nouns:

pʔii-ypʔəx	'name'	n-pʔii	'my name'
sanxeel-pʔəx	'messenger'	n-sanxeel	'my messenger'
çʔaʔ-ypʔəx	'chewing gum'	n-çʔaʔ	'my chewing gum'

The variant pʔx is used with nouns for edibles:

čiʔ-pʔx	'meat'	n-čiʔ	'my meat'
çʔuʔ-pʔx	'(sugar)cane'	n-çʔuʔ	'my (sugar)cane'
loʔ-pʔx	'fruit'	n-loʔ	'my fruit'
kʔaʔ-pʔx	'drink'	n-kʔaʔ	'my drink'
kʔsuʔ-pʔx	'green corn'	n-kʔsuʔ	'my green corn'
waa-pʔx	'tortilla'	n-waa	'my tortilla'

The variants x after marginals and centro-marginals and ʔ after centrals are used with nouns for pieces of clothing and various other personal belongings:

paas-x	'woman's belt'	n-paas	'my belt'
kamis-x	'shirt'	n-kamis	'my shirt'
wees-x	'trousers'	n-wees	'my trousers'
am-x	'skirt'	w-an	'my skirt'
siipʔ-x	'ribbon'	n-siipʔ	'my ribbon'
suʔt-x	'kerchief'	n-suutʔ	'my kerchief'
kwenč-x	'necklace'	n-kwenč	'my necklace'
xaa-ʔ	'house'	n-xaa	'my house'
sii-ʔ	'firewood'	n-sii	'my firewood'
kaa-ʔ	'grindstone'	n-kaa	'my grindstone'

The following two nouns do not fit into this class semantically, but they have the variant x:

im-x	'breast'	w-in	'my breast'
e?liip?-x	'daughter-in-law'	n-liip?	'my daughter-in-law, my parent-in-law of woman'

Certain basically possessed nouns do not combine with the derivative 'non-possession'. Among them are some of the nouns that are used in the place of prepositions.

t-ux	'its "inside-ness"'
t-u?n	'its/his doing'
t-xaq?	'its "under-ness"'
t-miix	'its middle'
n-p?aalek	'my brother/sister-in-law'
n-?ik	'my older sibling'
w-iic?en	'my younger sibling'
n-siip?en	'my brother (of woman)'
w-aanep?	'my sister (of man)'
n-?q?uu?B	'my heel'
t-looq	'its wattle, dewlap'
t-seew	'his breath'
t-wiineq	'a period of twenty days'
k-p?et	'the number of them'
n-?ii	'the fear I inspire'

'Possession' Of the basically non-possessioned nouns some are never possessed and do not combine with the category

/interlocutor/; others can be possessed and their possessed forms differ from the non-possessed forms only through the added affixes for /interlocutor/; still others both add the affixes for /interlocutor/ and combine with a derivative 'possession' when possessed.

The sign expression for 'possession' is a vowel homophonous with the first vowel in the word and infixed next to that vowel:

aʔ	'water'	w-a-a-ʔ	'my water'
čupʔ	'spindle'	n-ču-u-pʔ	'my spindle'
miʔš	'turkey hen'	n-mi-i-ʔš	'my turkey hen'
šuq	'cat'	n-šu-u-q	'my cat'
uʔx	'paper'	w-u-u-ʔx	'my paper'
čeyep	'rain cape'	n-če-e-yep	'my rain cape'
satan	'cotton'	n-sa-a-tan	'my cotton'
tanom	'town'	n-ta-a-nom	'my town'
ičax	'greens'	w-i-i-čax	'my greens'
ukʔil	'cooking pot'	w-u-u-kʔil	'my cooking pot'
ačʔen	'salt'	w-a-a-čʔen	'my salt'
qʔotex	'corn drink'	n-qʔo-o-tex	'my corn drink'
iqəč	'burden'	w-i-i-qəč	'my burden'

In two nouns the sign expression for 'possession' is homophonous with the second vowel and infixed next to it:

pʔaxlaq	'corn cob'	n-pʔaxla-a-q	'my corn cob'
əsiʔn	'corn'	n-əsi-i-ʔn]nsiiʔn[	'my corn'

Two nouns also change slightly when the homophonous

vowel is infixed:

ɕimaaʔ/ɕumaaʔ	{ɕmaaʔ}	'gourd dipper'
n-ɕi-i-mən		
n-ɕu-u-mən		'my gourd dipper'
saxapʔ	{sxapʔ}	'sandal'
n-saapʔ		'my sandal'

The expected possessed form of saxapʔ {sxapʔ} is n-sa-a-xapʔ in which the x contracts overlapping with zero because it is in the position between a geminate and a single central, [nsaaapʔ]; and it appears that one of the three centrals drops with the x to produce the actual form nsaapʔ.

In the noun 'dog', glottal stop appears as a variant of the sign expression for 'possession':

cʔyan	'dog'	n-cʔya-ʔ-n	'my dog'
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and in the words 'mother' and 'mouth', glottal stop expresses 'possession' of a less personal nature than do the simple (and basically possessed) forms of the two nouns:

n-ɕuu	'my mother'
ɕuu-ypʔəx	'mother'
q-ɕuu-ʔ	'our mother' (referring to a carved image of Saint Mary)
n-ɕii	'my mouth'
ɕii-ypʔəx	'mouth'
t-ɕii-ʔ kɕiil	'the edge of a knife'
t-ɕii-ʔ ʂoqʔ	'the "edge" or opening of a pot'

t-ɕii-ʔ xaaʔ	'the door opening of a house'
t-ɕii-ʔ nimaʔ	'the edge or bank of a river'

'Inherent possession' A different kind of possession is specified with a derivative that I call 'inherent possession'. 'Inherent possession' does not indicate actual possession, but rather some inherent connection between the noun and the "possessor":

laq	'bowl'
n-la-a-q	'my bowl'
t-la-a-q-əl n-qʔapʔ	'the inherent bowl of my hand, my palm'
t-la-a-q-əl n-qen	'the inherent bowl or the arch of my foot'

The sign expression for 'inherent possession' is əl with most nouns that end in a marginal or a centro-marginal and yəl with most nouns that end in a central:

xul	'hole'
t-xul-əl xaaʔ	'the hole dug for a house'
ʃtuuqʔ	'knot'
t-ʃtuuqʔ-əl n-qul	'my Adam's apple'
qʔool	'resin'
t-qʔool-əl kandeelə	'candle drippings'
ɕaʔx	'ashes'
t-ɕaʔx-əl [tɕaʔl] nʃiiɕʔ	'the ashes from my cigarette'

uʔx	'paper'
t-uʔx-el [tuʔl] nɔʔoɔʔ	'the inherent paper or title to my land'
pʔee	'road'
t-pʔee-yəl n-wiʔ	'the road of my head, my parting'

With a few nouns the variant of the sign expression for 'inherent possession' is a geminate central plus l:

ɕikʔ	'blood'
n-ɕikʔ-eel [nɕkʔeel]	'my own blood'
t-ipən	'his strength'
t-ipəm-aal	'his inherent strength'
t-suml-aal	'his body'
t-ɕunqʔl-aal	'his life'

The last two nouns are always modified by 'inherent possession'. I have been unable to find a difference in content between tipən and tipəmaal.

'Ordinal' A number of different derivatives select the category of numerals. The derivative 'ordinal' forms ordinal numerals from numeral radicals. Radical units with the derivative 'ordinal' appear to be nouns and they are always possessed. The sign expression for 'ordinal' is əʔn after marginals and centro-marginals and yəʔn after centrals:

kaapʔ-ə	'two'
t-kaapʔ-əʔn kʔwaal	'the second child'
oos-ə	'three'
t-oos-əʔn kʔwaal	'the third child'

k'aax-ə	'four'
t-k'aax-əʔn [t'k'aaaʔn]	k'waal 'the fourth child'
xweʔ	'five'
t-xweʔ-yəʔn k'waal	'the fifth child'
(w)qaq	'six'
t-(w)qaq-əʔn k'waal	'the sixth child'
wuuq	'seven'
t-wuuq-əʔn k'waal	'the seventh child'
waxsəq	'eight'
t-waxsaaq-əʔn k'waal	'the eighth child'
pʔelx-əx	'nine'
t-pʔelx-əʔn k'waal	'the ninth child'
la(a)x-əx	'ten'
t-lax-əʔn k'waal	'the tenth child'

The final ə in kaapʔə 'two' and oosə 'three' and əx in pʔel-xəx 'nine' and la(a)xəx 'ten' are possibly sign expressions for a derivative 'cardinal'.

'Distributive' Another derivative that appears mainly with numeral radicals is called 'distributive'. It indicates that the number in question is one of several identical numbers, each referring to one of another set of elements. The sign expression for 'distributive' is either (q)č or a partial reduplication. With the number 'three' the variant is əs. (q)č is the variant used for all numerals above 'five'.

xuux-xən]xuun[te xuun	} 'one for each'
xuun-xən-qč]xuunqč[te xuun	
kaapʔ-kəpʔ]kaaʔkəpʔ[te xuun	'two for each'

oos-əs te xuun	'three for each'
kaax-kəx-qč te xuun	'four for each'
xwe?-qč te xuun	'five for each'
(w)qaq-č te xuun	'six for each'
wuúq-č te xuun	'seven for each'
waxseq-č te xuun	'eight for each'
pʔelxəx-qč te xuun	'nine for each'
laaxəx-qč [laaaxqč] te xuun	'ten for each'
wiinqʔən-qč te xuun	'twenty for each'
kaaʔwnəq-č te xuun	'forty for each'
niʔ čʔin-qč tweʔ	'what size is each one?'
xteʔ-qč	'how much for each?'

'Ago' 'in' These two "numeral" derivatives are of restricted occurrence. They select a combination of a numeral and 'year' or 'day', and they indicate the number of years or days that either have passed or will pass. The sign expression for 'ago' is ee or e and for 'in' it is zero:

xun-aapʔ-Ø	[xnaapʔ]	'next year'
xun-aapʔ-e	[xnaapʔe]	'year ago'
kapʔ-aapʔ-Ø	[kpʔaapʔ]	'in two years'
kapʔ-aapʔ-e	[kpʔaapʔe]	'two years ago'
kaapʔ-x-Ø		'the day after tomorrow'
kaapʔ-x-ee		'the day before yesterday'
oos-aapʔ		'in three years'
oos-aapʔ-e		'three years ago'
oos-x-Ø		'in three days'
oos-x-ee		'three days ago'

kaax-aap?-Ø	'in four years'
kaax-aap?-ə	'four years ago'
ko-x-Ø	'in four days'
kon-x-ee	'four days ago'
op?s	'in five days'
kup?s	'in six days'
qup?s	'in seven days'

The x in the forms concerning days can probably be identified with the x of nči?-x 'tomorrow', and aap? is the first part of the word 'year', aap?-q?ii.

The interrogative conjunctions xtoox-Ø 'when (fut)' and xtooxə [-xtooo] 'when (past)' appear also to include the derivatives 'in' and 'ago'.

'Causative' The 'causative' indicates that the state or action of the radical with which it combines is caused by someone or something that is itself not directly involved in the attainment of that state or action.

The sign expression for 'causative' has two variants, p?a and sa. The variant p?a selects a certain element of content that can perhaps be designated 'shape-position'. Thus the radical determines which variant of the sign expression is chosen. If the radical includes the content element 'shape-position', then p?a must be used, and if the radical does not include that content element, then sa is the variant to be chosen.

The presence of the element 'shape-position' in a given root is recognized not only through the choice of

variant for the 'causative', but also through the selection of two other derivatives, 'motion' and 'position'.

It may not always be obvious from the English translations why one radical can be said to include 'shape-position' whereas some other cannot. 'Shape-position' adds some aspect of appearance: both q̄q̄iix and wok? mean 'dry' or 'dried out'. When expressed by q̄q̄iix, it simply implies 'not wet', but wok?--due to the element 'shape-position'--in addition to 'not wet' also indicates, for example, 'warped or curled up from dryness' or 'sounding hollow when tapped'.

My recognition of a selection between p?a and 'motion' and 'position' on the one hand and the content element 'shape-position' on the other does not imply that I thereby fix the field of activity of p?a and of 'motion' and 'position' to a certain set of radicals that I can list here. In other words, this recognition does not restrain the creativity of the speakers. If a speaker makes a positional verb or a causative with p?a out of the word 'grandfather', then this will represent a change in usage--the unit 'grandfather' will add the element 'shape-position' to its components--but it will not involve any change in schema unless some incompatibility has been established between 'shape-position' and the content elements included in 'grandfather'.

Some examples of the two variants of the sign expression for 'causative':

kokʔ	'small'
kokʔ-sa-	'cause to be small, chew, chop'
kim	'die'
kim-sa-	'cause to die, kill'
xaaw	'go up'
xaaw-sa-	'cause to go up, sigh'
qʔum-ən	'smooth'
qʔum-sa-	'cause to be smooth'
kaapʔ-ə	'two'
kaapʔ-sa-	'cause to be two, divide'
tʔaʔq	'wet'
tʔaʔq-pʔa-	'cause to be wet'
qʔuq-l	'sitting'
qʔuq-pʔa-	'cause to sit, put down'
špat-ən	'barefoot'
špat-pʔa-	'cause to be barefoot'
sleek-l	'standing on one leg'
sleek-pʔa-	'cause to stand on one leg, jack up a car'

After roots ending in a central plus glottal stop, the variant of the sign expression that selects 'shape-position' is not pʔa, but pʔ:

qʔeʔ-l	'lying across'
qʔeʔ-pʔ-	'cause to lie across, put across'
waʔ-l	'standing upright'
waʔ-pʔ	'cause to stand upright, put upright'
yoʔ-l	'hanging'
yoʔ-pʔ	'cause to hang, hang up'

'Vertitive' The derivative called 'vertitive' indicates a change to the state expressed by the radical units which the derivative selects. The sign expression for 'vertitive' has three basic variants: pʔe, t, and es/vəs/aas. es/vəs/-aas seems to be productive and it is the only one of the three variants that occurs when 'vertitive' combines with a derivative called 'adjective' expressed by ən. But otherwise it is not clear what relations determine the choice between the three variants. I have registered t in combination with only eleven roots and pʔe with nine.

yaax	'late'
yaax-t	'be or become late'
čew-t	'become cold'
pʔin-t	'become made or done'
yaapʔ-t	'become sick'
sik-t	'become tired'
meeqʔ-t	'become warm'
qʔax-t	'become heard'
lapʔ-t	'become excited'
sox-t	'become inflicted with <u>sox</u> [a corn disease]
čʔak-t	'become inflicted with <u>čʔaʔk</u> [a sore or ulcer]
pʔee	'road'
pʔee-t	'to walk'
čaʔs	'green'
čaʔs-pʔe	'become green'
čkin-pʔe	'become deaf'
kaq-pʔe	'become hot, mad'
kʔis-pʔe	'get hurt'

maq-pʔə	'become dumb'
qʔunqʔ-pʔə	'become spoiled (about food)'
saas-pʔə	'become light (about weight)'
saas-pʔə	'become thin'
kan-pʔə	'become inflicted with <u>kan</u> [cramp]'

It is not obvious that the t in pʔee-t 'to walk' is the suffix for 'vertitive'; perhaps it is suffix for a different derivative of which there is only this one example.

yəs occurs after roots ending in Vʔ or x:

ʔuʔ	'fetid'
ʔuʔ-yəs	'become fetid'
aqʔ-yəs	'become bad'
aʔ-yəs	'become water'
plcox	'weak'
plcox-yəs {plooxəs}	'become weak'
siix-yəs {siixəs}	'become hoarse'
ʔqʔaxlaax-yəs {ʔqʔaxlaaxəs}	'become level'
ʔaʔx	'ashes'
ʔaʔx-yəs {ʔaʔxəs}	'become ashes'

aas occurs after the suffix ən for 'adjective' and after four simple roots:

ʔʔum-ən	'smooth'
ʔʔum-ən-aas	'become smooth'
puuʔ-ən-aas	'become soft'
qʔul-ən-aas	'become tepid'
lek-ən-aas	'become shady'
qʔen-aas {qʔnaas}	'become ripe'
qʔeeq-aas	'become black'
saq-aas {sqaas}	'become white'

čiʔ-aas	'become sweet'
čiʔ-yes	

əs occurs after monosyllabic roots others than qʔent 'ripe', qʔeeq 'black', saq 'white', and čiʔ 'sweet':

člupʔ	'thin'
člupʔ-əs	'become thin'
čʔom	'sour'
čʔom-əs	'become sour'
mooš-əs	'become blind'
quʔq-əs	'become dust'
sul-əs	'become insipid'

One root, kiw 'hard', has a fourth variant, iis, kiw-iis {kwiis} 'become hard'.

'Motion' The derivative that I call 'motion' indicates moving to a position or in a shape expressed by the radical. It selects the content element 'shape-position'. The sign expression for 'motion' has one variant, ee:

qʔuq-ee	]qe[	'move to sitting position'
sleek-ee	{sleke}	'get up on one leg' (intr)
čin-ee	{čne}	'move to stretched position'
çal-ee	{čle}	'lie down on one side'
xooq-ee	{xoqe}	'crouch down'

'Abruptive' Another derivative, which I call 'abruptive' for lack of a better term, also indicates motion, but sud-

den, involuntary, or unexpected motion. It is found with most of the radical units that include the content element 'shape-position', and with a great number of other radicals. The sign expression for 'abruptive' has four variants, pəx, kʔəx, qʔəx, and ɕʔəx whose distribution appears to be determined exclusively by usage.

ma čin-kupʔ qʔuq-pəx	'I sat down or fell down to sitting position suddenly and involuntarily'
ma čin-iʔy qʔuq-pəx	'I fell involuntarily from sitting position'
ɕʔoy-pəx	'become deflated suddenly'
likʔ-pəx	'glide off suddenly'
nak-pəx	'doze off involuntarily'
ip-kʔəx	'swell unexpectedly'
pit-kʔəx	'trip'
nič-kʔəx	'recur' (about disease)
pičʔ-qʔəx	'tumble down involuntarily'
muɕ-qʔəx	'fall forward involuntarily'
xul-qʔəx	'flame up suddenly'
lew-ɕʔəx	'split off suddenly'
qop-ɕʔəx	'quiver by itself'
yup-ɕʔəx	'become extinguished'

'Iterative' The derivative 'iterative' indicates that an action is repeated many times; it is particularly common with words that refer to various sounds. It is expressed

by a suffix nəxə:

cʔut	'drop'
cʔut-nəxə	'drip'
cal-	'being, lying on one side'
cal-nəxə	'sway from one side to the other, back and forth'
leeqʔ-	'lick'
leeqʔ-nəxə	'drink (about dogs)'
poqʔ-	'burst'
poqʔ-nəxə	'clap one's hands'
yup-	'extinguish' (intr)
yup-nəxə	'flicker'

'Progressive' The derivative 'progressive' indicates that the action expressed by the radical takes place over a certain period of time. It has not only the idea of continuity, but also of repetition, and just as the preceding derivative this one is often connected with sound.

The sign expression for 'progressive' is a reduplication; if the root is $C_1V_1C_2$, then the sign expression can be described as $əC_2V_1$:

poq-	'roast'
poq-əqo-	'crackle'
sut-	'turn'
sut-ətu-	'turning and turning'
tʔapʔ-	'without teeth'
tʔapʔ-əpʔa-	'stammer'
xil-əli-	'slither (about snakes and rivers)'
wil-əli-	'walk quickly with small steps'

Various Verbal Derivatives There is a number of derivatives that are not productive and are found to occur with only a small number of radicals. They combine with 'tense', 'voice', and 'mood', in other words they form verbs, but it seems unreasonable to say anything specific about their content on the basis of the few examples, and I shall simply list some of them:

caq-	'ignite'
caq-pi-	'turn on a flashlight'
kot-	'loose (about knots)'
kot-pi-	'undress'
lew-	'split off'
lew-pu-	'cause to split off'
likʔ-	'spread out'
likʔ-pu-	'cause to glide off'
čʔip-či-	'wash hair'
čʔit-č-	'shake' (tr)
loq-l-	'boil' (tr)
ličʔ-l-	'quiver' (intr)
pat-qʔu-	'turn the earth'
niʔy-kʔu-	'stack (about firewood)'
taq-kʔu-	'cut in two'
yup-čʔi-	'extinguish' (tr)
meel-čʔu-	'return' (tr)
max-čʔu-	'fold once'
maq-si-	'stop up' (tr)
suq-mu-	'blow one's nose'
sax-ni-	'embrace'

xīqʔ-č	'rattle' (intr)
xok-č	'slide in gravel (about the sound)'
nakʔ-č	'squeak'
pʔukʔ-č	'bump with a hollow sound'
xupʔ-č	'snap'

The derivative expressed by č as found in the last five examples is clearly connected with the sound of the action.

There is another suffix, le, that I analyze as the sign expression for a derivative. It combines with few verbs and its use is very specific; it indicates 'since the time of the action' in most contexts:

(tex) t-uul- <u>le</u> -n sin	'since he has come, no bad
min tiʔ iil o pʔax	events have taken place'
tex t-uul sin min tiʔ	'when he came, no bad
iil o pʔax	events took place'
nčīʔ-tq t-uul- <u>le</u> -el sin	'he came the day after
tex n-siʔ	I went'
iil	'sin, bad event'
pʔax	'take place'
nčīʔ-tq	'the following day'

t-pʔax-le-	'since it was finished'
t-kupʔ-le-	'since he went down'
t-siʔ-le-	'since he went away'

The derivative present in the verbs of subgroup 3° was discussed and exemplified on p. 123ff.

A vowel homophonous with the root vowel is used in

forming the incompletive verb forms, which were mentioned on p. 70 and p. 126.

co-q-k-en	'call' (intr)
kʔu-u-p-en	'cut' (intr)
ko-q-l-en	'defend' (intr)

A y appears as the sign expression for a derivative between the root--if it ends in a central--and the suffixes for 'tense', 'voice', and 'mood' in some verbs that are derived from nouns:

pʔee	'road'
pʔee-y-en	'make roads'
paa-ʔ	'bag'
paa-y-en	'make bags'
ʔʔiʔ	'mouth organ'
ʔʔiʔ-y-en	'play the mouth organ'

'Participle' In active constructions with a directional verb and a second verb, the second verb usually appears with an infixed ʔ that I analyze as the sign expression for the derivative 'participle'. That form appears not only in such constructions with directional verbs, but also as an adjective:

ʔuy-u-ʔ-n	{ʔyuʔn}	qen	'I am caught'
xaq-o-ʔ-n	{xqoʔn}	wuʔn	'it (is/was) opened by me'
ma ʔʔ-eel siʔ	{ʔʔes[		'I opened it'
n-xaq-o-ʔ-n	{naqoʔn}		

It is found optionally in a form that refers to a single occurrence of the action:

kaapʔə	cʔin-o-on	{cʔnon}	'two blows'
	cʔin-o-ʔ-n	{cʔnoʔn}	

'Position' The derivative 'position' indicates just that, position, and as mentioned above it selects radicals that include the content element 'shape-position'. The combination of a radical and 'position' is used as an adjective.

The sign expression for 'position' has two variants, č and l. č is the less common variant; it occurs after all roots that end in l, whereas l occurs elsewhere.

čʔaax-l	'naked'
qʔuq-l	'sitting'
xooq-l	'crouching'
čin-l	'taut'
čʔooy-l	'deflated'
naak-l	'dull'
muč-l	'lying face down'
čʔal-č	'lying down'
čal-č	'lying on one side'
kʔal-č	'piled up'
siil-č	'shredded'
tool-č	'lying cylindrically'
tuul-č	'lying spherically'

There are three roots with an initial l after which č is also found, but all other roots beginning with l allow only one variant of the sign expression for 'position', namely l.

lep-č		'in pursuit'
laan-č	}	'lying down'
laan-l		
lew-č	}	'open, split off'
lew-l		
laačʔ-l		'stacked (about books)'
laač̣ʔ-l		'clinging together'
leq-l		'squatting (about hen)'
liičʔ-l		'open (about a book)'
looq-l		'lying wet'
sleek-l		'standing on one leg'
looš-l		'chipped'

This form with 'position' occurs rarely without a following directional that is manifested in a quite abbreviated shape:

qʔuq-l kupʔ	]qʔuqlke[	'sitting down'
kočʔ-l ok	]kočʔlək[	'lying on a slope'
kʔal-č eel siʔ	]kʔalčpʔəs[	'piled up out there'
kʔal-č xaaw siʔ	]kʔalčxəs[	'piled up up there'
kʔal-č ok siʔ	]kʔalčləks[	'piled up in there'

Before the directionals in the last given form an l appears for which I have no interpretation. It looks as if both variants of the sign expression for 'position' are present at one time'

'Adjective' The derivative "'ness'" selects a large class of words that fall into two categories: one of simple roots and one of roots that are already selected by one derivative.

that I call 'adjective'.

The sign expression for 'adjective' has two variants: ən and 2. ən is a suffix, and 2 is infix after the central of the root. I have not so far succeeded in establishing the distribution of the two variants. It does not depend upon expression elements; and several roots vary freely between the two:

ɕʔu-ʔ-y	'skinny'
ɕʔuy-ən	
spe-ʔ-l	'pale'
spel-ən	
xiik-ən	'straight'
puuɕ-ən	'soft'
šqʔil-ən	'green'
ɕʔum-ən	'smooth'
čʔa-ʔ-k	'sticky'
šxi-ʔ-l	'lean, tall'
lee-ʔ-ɕ	'with little sprouts'

A few radicals that seem to share a content element having to do with perception are selected by a derivative whose content is unclear. Its sign expression is a reduplication, $C_1(\underline{ə})x$; with two roots it is $C_1\underline{ən}$. I quote all the examples found of this derivative:

kʔoo-kʔx	'smelling (good)'
saa-sx	'light (about weight)'
saa-sx	'thin'
qa-qx	'tasting like lime'
muu-mx	'sheltered'

cin-cx	'dangerous'
q'un-q'x	'fetid'
c'in-c'x	'smelling like horse urine, burnt eggs, and incense'
cub-cx	'good'
meeq?-mex	'warm'
q'ax-q'ex	'audible'
q'ul-q'ex	'luke warm'
k'is-k'ex	'hurt'
xic?-q'ex	'thin'
maq-men	'dumb'
kol-ken	'loose'

Another rare derivative that appears to form adjectives has the sign expression ne:

xaaw-ne	'up (there)'
kup?-ne]ku'mne[	'down (there)'
ok-ne	'east (there)'
eel-ne	'west (there)'
nox-ne	'full'
p'in-ne	'made ready'
p'ax-ne	'exhausted, weak'

nin is sign expression for a derivative that forms adjectives from verbs:

sik-t	'get tired'
sik-t-nin	'tired'
eel	'go westwards'
eel-nin	'going westwards'
si'	'go'
si'-nin	'going'

kim	'die'
kim-nin	'dead'
ič-əm-nin	'being in a serious situation'
iš-x-nin	'a wound'
kʔis-pʔəx-nin	'hurt'

'Infinitive' There are two derivatives that I call 'infinitive', 'transitive infinitive' and 'intransitive infinitive'. Both indicate the abstract action and the agent. The sign expression for 'transitive infinitive' is l and for 'intransitive infinitive' vl.

kʔay-l šoqʔ	'to sell pots, potseller'
čom-o-l [čmol] amx	'to weave skirts, a weaver of skirts'
kʔay-əl	'to sell, a salesman'
kaaw-əl	'to command, a master'
čok-eet-əl [čketəl]	'to be called'

pʔəx is sign expression for 'passive 1/passive 2, infinitive' (cf. also p. 107f):

paat-pʔəx	'to be burnt'
kʔay-pʔəx	'to be sold'
čeeʔ-pʔəx	'to be ground'
pʔiy-pʔəx	'to be killed'
axl-a-pʔ-pʔəx	'to be counted'

'Instrumental, locative' The derivative 'instrumental, locative' does not indicate both instrument and location at the same time. It combines with most verbal radicals and according to the context it is found to indicate either instrument or location. Its sign expression has two basic variants, pʔəl and pʔl. pʔəl occurs after a marginal or a centro-marginal and pʔl after a central.

t-ux loqʔ-o- <u>pʔl</u> [lqʔcpʔl] /	'the place in the market
loqʔ- <u>pʔəl</u> əsiʔn	where corn is sold'
t-ux maʔ-o- <u>pʔl</u> [mʔopʔl] /	'the place where sheep
maʔ- <u>pʔəl</u> lant	are sheared'
čers ɕin axpʔən te maʔ-	'shears are used for
o- <u>pʔl</u> [mʔopʔl] /maʔ- <u>pʔəl</u>	shearing off wool'
lant	
kʔay-pʔəl	'the selling'

A different variant is recorded with a few roots:

pʔiy-pʔəl	
pʔiy-pʔəʔ	'slaughter knife'

The variant pʔəʔ is identical with an abbreviated form of the directionals eel plus ɕaax as it occurs in a number of situations, and pʔəl is identical with a form of eel as it occurs in the same situations:

kʔal-č eel ɕaax]kʔalčpʔəʔ[	'it is piled up out there'
aqʔ-o-l eel ɕaax]qʔolpʔəʔ[	'to hand it over to me'
yoʔ-pʔ-ən eel]yopʔənpʔəl[	'to hang it out'

'Measure' The derivative 'measure' indicates the quantity of an object that is involved in one occurrence of the action contained in the radical.

The sign expression for 'measure' is a central homophonous with the central of the root plus x. The central of the root is always short:

čʷuq-əl	'to pile up (rocks, corn)'
xun čʷuq-ux {čqux} əsiʔn	'one pile of corn'
xoot-əl, xot-o-ol {xtool}	'to dig'
xun xot-ox {xtox} ɕʷocʷ	'one "two-handful" of earth'
ɕik-o-ol {ɕkool}	'to cook'
xun ɕik-ix {ɕkix} čliʔpʷx	'one piece of cooked, dry meat'
kʷal-o-ol {kʷlool}	'to tie'
xun kʷal-ax {kʷlax} siiʔ	'one load of firewood'
qiin-əl	'to stretch, make taut'
xun qin-ix {qnix} kwenčx	'one string of necklace'
qʷeʔ-l	'horizontal, slanted'
xun qʷeʔ-ex]qʷeʷx[ɕʷocʷ	'a slightly sloped piece of land'
waʔ-l	'upright'
xun waʔ-ax]waʷx[ɕʷocʷ	'a steeply sloped piece of land'

In a few examples the central of the suffix is not homophonous with the central of the root, but identical with the sign expression for the derivative that selects verbs of subgroup 3°:

tan-o-ol {tnool}	'to stack firewood'
xun tan-ɔ-x {tnox} siiʔ	'a stack of firewood'

The derivative 'measure' is not productive; and with some radicals the root alone, with others the 'non-future, active' appear to express the same concept of measure.

xixʔ-o-ol {xixʔool}	'to fasten, tie'
xun xixʔ ʔʔum	'one small bunch of straw'
pʔaʔ-l	'to bite off'
xun pʔaʔ waapʔx	'one bite of tortilla'
yuupʔ-el	'to make a fist, grab'
xun yupʔ ʔsiʔn	'one handful of corn'
ʔuy-u-ul {ʔyuul}	'to grasp'
xun ʔuy-u-un {ʔyun} ʔuxpʔel	'one handful of twigs'
ʃpʔ-o-ol	'to pinch'
xun ʃp-o-on {ʃpʔon} aʔʔen	'one pinch of salt'

"ness" The derivative "ness" forms an abstract noun from adjectives. "ness" selects the category /interlocutor/. Its sign expression has the following variants: yəl with roots that end in a central or x, əl with most other roots, and aal following the sign expression ən for 'adjective':

nqaa	'near, close'
t-nqaa-yəl	'its nearness'
mee	'dumb'
t-mee-yəl	'his dumbness'
ʔʔaʔx	'naked'
t-ʔʔaʔx-yəl {tʔʔaʔxəl}	'his nakedness'
peʔx	'barren'
t-peʔx-yəl {tpeʔxəl}	'its barrenness'

cʔom	'sour'
t-cʔom-əl	'its sourness'
špiš	'stingy'
t-špiš-əl	'his stinginess'
kaapʔ-ə	'two'
k-kaapʔ-əl	'their two-ness, the two of them'
pʔiil-en	'slippery'
t-pʔiil-en-aal	'its slipperiness'
xiik-en	'straight'
t-xiik-en-aal	'its straightness'

The variant aal also occurs with a few roots without the suffixed en:

nim	'big'
t-nim-aal	'his bigness'
čiʔ	'sweet'
t-čiʔ-aal	'its sweetness'
qʔeeq	'black'
t-qʔeeq-aal	'its blackness'
xun	'one'
n-xun-aal	'my one-ness, I alone'

With some roots the suffix en for 'adjective' occurs only in combination with aal for '"ness"', whereas with others the derivatives do not combine:

quus	'smelling burnt'
t-quus-en-aal	'its burnt smell'
čʔiʔk	'pointed'
t-čʔiʔk-en-aal	'its pointedness'
mookʔ-en	'growing densely'
t-mookʔ-əl	'its dense growth'

'Attenuation' The derivative 'attenuation' indicates that the quality contained in the radical is attenuated. The sign expression for 'attenuation' has two variants: əyin after marginals and centro-marginals and vin or vəyin after centrals:

saasx-əyin	'somewhat light (about weight)'
pʔaʔn-əyin	'somewhat good'
nim-əyin	'somewhat big'
čʔin-əyin	'somewhat small'
čepʔə-yin	'somewhat slowly'
slooʔ-yəyin	'somewhat thin'

'Indifferent' The derivative 'indifferent' selects radicals that include a content element 'question'. It indicates indifference or indefiniteness. The sign expression for 'indifferent' is qʔč or qč:

tiʔ	'what?'
tiʔ-qʔč	'whatever, anything'
aal	'who?'
aal-qč	'whoever, anybody'
xaaʔ	'where?'
xaaʔ-qʔč	'wherever, anywhere'

s There are three prefixes whose content is unclear in most occurrences. I do not know whether they are variant sign expressions for one derivative or invariants for three.

They are s, š, and s. In a number of examples the meaning of s is something like 'self' or 'around itself':

kʔal-	'to tie'
s-kʔl-oʔs-əl	'to make a ball of yarn'
lekən	'shade'
t-s-lekəm-aal	'his own shade, shadow'
maq-	
seew	'breath'
s-maq-seew-əl	'to smother'
naapʔ-l	'mind, soul'
s-naapʔ-əl	'to talk in one's sleep'
naqʔ-	'accustomed'
s-naqʔ-ʔa-	'to learn (to accustom oneself)'
pin	'thick'
s-pin	'with thick bark'
waak-l	'with a big knot, many knots'
t-s-waak-əʔu-un	'is foaming (making its own knots)'

The following is a list of examples with the three prefixes:

(s)nak	'dull'
(s)kaqtaapʔ	'a mushroom'
s-qʔoqʔ	'squash plant'
qʔoqʔ	'squash'
(š)poqʔ-l	'naked'
(š)puuqʔ	'cone-shaped'
tʔik-pəx	'jump'
š-tʔik-l	'with one leg in the air'
(s)litʔ	'very thin'
(s)yum-ən	'blurry'
(s)luʔq	'pliable'

A number of sign expressions for derivatives appear to be accompanied by a lengthening of the root vowel. However I have not so far succeeded in discovering the functions that determine when lengthening takes place or correlating it with some elements of content. Cf.

xaaq-l	'open'
xaaq-ee	'open up'
xaq-o-ol {xqool}	'to open'
poɕ-l	'ball-shaped'
poɕ-ee {pɕe}	'shaping oneself like a ball'
pooɕ-əl	'to wrap'
ɕiit-l	'sprinkled out'
ɕiit-ee	'pour out' (intr)
ɕiit-əl	'to pour' (tr)

The analysis of the derivational elements in the present operation is in no way exhaustive. Some little used elements have been left out entirely; and for the time being I shall not be able to subject the category to free analysis.

*g: TAXEMATICS

*gI

All through the analysis I have omitted various tests that, according to the theory, are to be applied in every operation. The purpose of the tests is to establish that the object under investigation is in fact a semiotic and to determine what kind of semiotic.

In operation *gI the pre-syntagmatic is reduced to a syntagmatic. The object under investigation is subjected to the definitive semiotic test and in the present analysis it is registered as a denotative semiotic.

*gII: Redistribution

In *gII the taxeme categories, which were registered in *gIII, are redistributed.

In each of the three operations of *gII a different relation is given as basis of distribution. The taxeme categories are classified one by one, first according to whether they contract the given relation or not; every taxeme in the taxeme categories is tested for this, and for the classification of a category as contracting the relation it is sufficient that one member of that category contract the relation in question. Secondly the taxeme cate-

gories that do contract the relation are classified according to their role in respect of the relation.

The categories subjected to redistribution are in all three operations of *gII the undivided taxeme categories as registered in *GIII.

The following is a list of the taxeme categories and the operations in which they were registered:

/modulations/	<u>s1</u>
/voice/	<u>g2</u>
/tense/	<u>g3</u>
/mood/	<u>g3</u>
<u>te</u>	<u>g5</u>
/article/	<u>2</u>
/case/	<u>2</u>
/interlocutor/	<u>2</u>
/exclusion/	<u>2</u>
/centrals/	<u>t4</u>
/marginals/	<u>t4</u>
/centro-marginals/	<u>t4</u>
/radical units/	<u>4</u>
/derivatives/	<u>4</u>

In this presentation only operation *gIII1 is carried out. The other operations in *gII and operation chains *gIII and *gIV are briefly mentioned after *gIII1.

*gIII1

"In *gIII1 the basis of distribution is direction, considered within the maximal lexia or lexia-unit." (Résp. 114).

The definition of direction is not easily unraveled, and rather than going through the many definitions that it presupposes, I shall venture an informal interpretation. I must strongly emphasize, however, that no such approximation can convey the full implications of the exact definition.

Direction is a syntagmatic cohesion that selects the category of lexias and lexia-units. (A cohesion is a function that has at least one constant among its two functives.) Thus the presence of certain selections and of certain solidarities presupposes the presence of a lexia.

The two modulations contract selection, / $\longrightarrow$ \ ; this selection presupposes the unit lexia of which both the selection and the two modulations are derivatives. Thus the selection contracted by the modulations is direction.

The selection between the preposition te and the unit it selects does not presuppose the presence of a lexia and is therefore not direction.

The taxeme categories are distributed over four categories: (Résp. Rg 143)

"The $\{*_G\}$ [taxeme categories] that include one or more elements contracting direction in all maximal lexias into which they enter are registered in $\{\beta_2\}$."

The $\{*_G\}$ that include one or more elements not contracting direction in any maximal lexia into which they

enter are registered in $\{iB_2\}$.

The $\{*_G\}$ that include one or more elements both contracting and not contracting direction in all maximal lexias into which they enter are registered in $\{iv_2\}$.

The $\{*_G\}$ that include one or more elements contracting direction in some, and not contracting direction in other maximal lexias into which they enter are registered in $\{i\Gamma_2\}$."

According to Rés Dff 220, 221, 222, and 223, the members of $\{i\beta_2\}$ are called directives (symbolized $*D$), those of $\{iB_2\}$ constitutives ($*M$), those of $\{iv_2\}$ flexives ($*P$), and those of $\{i\Gamma_2\}$ thematives ($*P_t$).

*GII.1.1

/Modulations/ The two modulations manifested by rising and falling intonation respectively, contract selection. Above I have used this selection to exemplify direction; its presence presupposes the presence of a lexia. The category of modulations thus includes "one or more elements contracting direction in all maximal lexias into which they enter", and it is registered in category $\{i\beta_2\}$, the category of directives.

The modulation that is manifested by falling intonation also appears alone:

\ nuq exaaw q?aq? ti?x xaa?

'a fire just broke out
in the house'

But this occurrence does not lead to the registration of the category of modulations in $\{iB_2\}$ as including "one or more elements not contracting direction" because it is an occurrence found only in simplex and not in maximal lexias, and the basis of distribution is here "direction, considered within the maximal lexia".

Since the two modulations both contract direction in all maximal lexias into which they enter, the category is registered only in $\{iB_2\}$.

/Voice/ In connection with the category /voice/ I have found one example of direction, and it is dependent upon the occurrence of /case/. There is solidarity between the two elements of case:

o čin-t-keʔy-ə-yə tex
w-eel siʔ]weʃ[

'you saw me when I went
out there'

keʔy-əl 'to see'

The 'subject case', included in t, and the 'object case', included in čin, are solidary, and this solidarity selects 'active', included in ə:

č	in	'object'	
		}	—————→ 'active'
t			

In other words, whenever the category /case/ is present, both elements of that category must appear, and the element 'active' is then also present. One could say that a case

distinction is found only in active clauses. The selection contracted by 'active' and 'object' $\sim$ 'subject' is direction.

'Active' does not contract direction in all maximal lexias into which it enters:

ma ċi-xaaw ɬaax]ċixaɬ[	'I washed them'
n-çʔax-o-ʔ-n [nçxoʔn]	
ma ċi-xaaw ɬaax]ċixaɬ[	'they were washed'
çʔax-o-eet]çxet[	

In neither of the two examples is any case distinction expressed, and 'active' as found in the first of the two examples does not contract direction.

The category /voice/ thus contains one element, namely 'active', that contracts direction in some and does not contract direction in other maximal lexias into which it enters. On the basis of this, /voice/ is registered in the category {i_r₂}.

The two other elements of /voice/, 'passive 1' and 'passive 2', do not contract direction in any of the maximal lexias into which they enter.

Agent is expressed not by an element of /case/, but by the preposition-like noun t-uʔn 'his doing, by him', and it does not select 'passive 1' or 'passive 2'. It is found with both and also with 'active', and in clauses where /voice/ is not present at all:

ma ɬkupʔ-ɬ çʔom-ət t-uʔn ɬin	'it was cut by him'
------------------------------	---------------------

ma Ø-kup?-Ø n-cʔom-a-ʔ-n
t-uʔn kčiił

'I cut it with a knife'

ma Ø-xaaw-Ø kʔis-x w-uʔn

'he was awakened unintentionally by me'

sin Ø-axqel-Ø sin w-uʔn

'he is running ahead of
me'

cʔom-el	'to cut'
kčiił	'knife'
kʔisx	'awakened'
axqel	'run'

On the basis of 'passive 1' and 'passive 2', which do not contract direction, the category /voice/ is thus registered in the category $\{iB_2\}$.

Mapping of the category results in the final registration of /voice/ in $\{i\Gamma_2\}$, category of thematives, according to Rés Rg 58 b) "If pre-elements entering into $\{i\Gamma_2\}$ have substitution to pre-elements entering into ... $\{iB_2\}$, they are assigned to $\{i\Gamma_2\}$."

/Tense/ Before I state the instances of direction contracted by members of the category /tense/, I shall try to outline the general system of relationships found between the two tenses, the adverbials of negation, and time indicators.

Time indicators are, for example:

ma	'simple, recent past'
s	'narrative, recent past'
o	'simple, distant past'

e	'narrative, distant past'
eewə	'yesterday'
xyaʔ-s	'early'
te ninqʔiix	'at the fiesta'
(te) lunəs	'(on) Monday'
kaapʔə taxlaal maaye	'on May second'

e 'narrative, distant past' has the variant ǵ with verbs that begin with a central. This ǵ is in this discussion of tense and time included wherever it occurs.

In the preceding operation series the time indicators have been registered either as nouns or as adverbials.

Some of them include an element of content manifested by 'non-past'; others include a content element manifested by 'past'; and still others contain neither of those two elements of content being basically neutral as to the distinction 'non-past' - 'past'. Neutrality or 'non-past' or 'past' are specifically indicated by choice of tense and by other time indicators.

Some time indicators that include 'non-past' are:

ok	'future (assertion)'
nčɪʔ-(x)	'tomorrow'
xnaapʔ	'next year'
xtox	'when (fut)?'

Some that include 'past' are:

ma	'simple, recent past'
o	'simple, distant past'

s	'narrative, recent past'
e	'narrative, distant past'
ee	'yesterday'
kaap?axee	'the day before yesterday'
xnaap?a	'last year'
ooxace {oooce}	'a long time ago'
zqee	'recently'
zmaak?es	'very recently, just now'
xtooxe {xtooo}	'when (past)?'
tex	'when (past)'

The time indicators that are neutral as to the elements 'non-past' and 'past' are the most numerous. Some of these are:

xya?-s	'early'
qaale	'late'
xake q?lix	'every day'
te lās oōe	'at eight o'clock'
ni?y (oore)	'at what time?'
te quni?yən	'at night'
kaap?a taxlaal maaye	'on May second'
xun sxaaw	'(for) one month'
lunes	
te lunes	'Monday(s)'
tux lunes	
zin	'simultaneity'
ox	'when (fut), whenever'

I shall now give some sentences in which the time indicators appear:

ok c'axool [-cxool] sux
 xtox ok axlaal sin
 nči? q'aq'ənan sin
 nči? q'eel oq sin
 nči? til sin
 kaap?x či'awan

xnaap? činaxlan
xnaap? q'aax sin

c'axool [-cxool]
 axlaal
 aq'ənaal
 oq
 il
 awaal

ma pon n-man
ma q'awan sin
o či? nman mlaax

o kim nman

šuul]suul[nman xya's

škim nman tu'n qooç?

q-aax meelq'ex nman xnaap'e

'she will wash'
 'when will he rest?'
 'tomorrow he will work'
 'tomorrow he will flee'
 'tomorrow he will see it'
 'they day after tomorrow
 they will sow'
 'next year I shall rest'
 'next year he will go
 back'

'to wash'
 'to rest'
 'to work'
 'flee'
 'see'
 'to sow'

'my father arrived here'
 'he sowed'
 'my father went to the
 coast (some time ago)'
 'my father died (some
 time ago)'
 'my father came early
 (today)'
 'my father died (today)
 in the landslide'
 'my father returned last
 year'

ekim nman tu'n qooq'

'my father died in the land-
slide (some time ago)'

eewa ci' sin

'yesterday he went'

eewa q'aax n'oxo'n {n'oxo'n}
nk'asp'en

'yesterday I paid my debt'

eewa kim sin

'yesterday he died'

eewa q'aq'enan sin

'yesterday he worked'

kaap'exee q'aax sin

'the day before yesterday
he returned to there'

kaap'exee cin'ci'on mi's

'the day before yesterday
I ate turkey'

xnaap'e q'uul sin

'last year he arrived here'

xnaap'e kim sin

'last year he died'

oox'ce {oo'ce} q'uul sin

'long ago he arrived here'

oox'ce {oo'ce} kimnin sin

'long ago he died'

oox'ce {oo'ce} cinok si'
]cinoks[tu'ye paale

'long ago I entered (into
service) with the priest'

q'ee cinuul tux mlaax

'recently I arrived here
from the coast'

q'ee cip'ax čomon {čmon}
sux

'recently they (women)
finished weaving'

q'maak'es q'aax sin

'he has just gone back there'

q'maak'es p'ax čomon {čmon}
sux

'she has just finished
weaving'

q'maak'es cin'e'ye

'I just burnt myself'

xtoox' {xtooo} q'uul sin

'when did he arrive here?'

xtoox' {xtooo} q'axlan sin

'when did he rest?'

tex tuul sin q'in quwaa'n

'when he arrived here (not
today), we were eating'

tex sɛuul]suul[sin
ɕin quwaaʔn

'when he arrived here
(today), we were eating'

nman 'my father'
mlaax 'coast'
kim 'die'
xyaʔ-s 'early'
qooçʔ 'landslide'
meelɕʔex 'return'
kʔaspʔen 'debt'
čoxool [čxool] 'to pay'

čiʔool 'to eat meat'
miʔš 'turkey hen'
tuʔye 'with him'
paalə 'priest'
čomool [čmool] 'to weave'
pʔax 'finish'
ɕʔeʔyel 'to burn' (intr)
waaʔl 'to eat'

ɕin čomon [čmon] sux
ɕin siʔ tux txaa sin
xakə qʔiix ɕin uul paalə
xakə qʔiix ɕin činaqʔənan
xakə qʔiix ok seʔl sin
miis
xakə qʔiix ɕ-uul xil kam-
yənetə xnaapʔə
yaax ɕin awan sin
yaax ɕin siʔ sin
yaax ok seʔl sin
yaax (ok) čomool [čmool]
sux
yaax esiʔ sin
xun qʔiix ɕin činxoʃon
[činxson]
xun qʔiix (ok) činxoʃool
[činxsool]
xun xnaapʔqʔii eten sin
tux mlaax

'she is weaving'
'he is going home'
'every day the priest comes'
'every day I work'
'every day he will go to
mass'
'the bus came every day
last year'
'he (always) sows late'
'he (always) goes late'
'he will go late'
'she will weave late'
'he went late'
'for one day I hoe'
'for one day I shall hoe'
'for one year he was at
the coast'

<u>lunəs</u> ɕin aqʔənan ɕin	'on Mondays he works'
<u>lunəs</u> ɕin siʔ ɕin kʔayəl	'on Mondays he goes selling'
<u>lunəs</u> ok aqʔənaal ɕin	} 'on Monday he will work'
<u>lunəs</u> ɕʔaqʔənan ɕin	
<u>lunəs</u> (ok) ɕinplasəyiil	} 'on Monday I shall go shopping'
<u>lunəs</u> ɕinplasəyin	
<u>lunəs</u> ɕiʃ lukul {lkul} is	'on Monday I shall go to dig up potatoes'
<u>lunəs</u> ɕuul ɕin	'on Monday he will arrive here'
<u>xvaʔs</u> ɕin xaaw waʔee]weʔ[	'he (always) gets up <u>early</u> '
<u>xvaʔs</u> ɕinseʔl nɕiʔx	'I shall go <u>early</u> tomorrow'
<u>te ləs sinkə</u> ɕin eel siʔ	' <u>at five o'clock</u> the mail goes out'
]eʃ[korea	
<u>te ləs oče</u> (ok) ɕinseʔl	'I shall go tomorrow <u>at eight o'clock</u> '
nɕiʔx	

txaa ɕin	'his house'
miis	'mass'
kamyənətə	'bus'
xoʃool {xsool}	'to hoe'
ten	'to be in a place'
kʔayəl	'to sell'
plasəyiil	'to buy at the market'
lukuul {lkuul}	'to dig up'
is	'potatoes'
waʔee]weʔ[	'in upright position'

The time indicators of the type te ləs sinkə, xvaʔs, and (te) lunəs appear as separate nexus when they precede the verb and when the verb refers specifically to past time:

<u>te ləs sinkə</u>	' <u>it was five o'clock</u>
(tex) sɕaax]saax[ɕin	when he went back (today)'

te ləs oče

(tex) wuul

'it was eight o'clock

when I arrived here (not today)'

xvaʔs

(tex) šinpʔax waaʔn

'it was early

when I finished eating (today)'

qaale

(tex) tuul šin eewə

'it was late

when he arrived here yesterday'

lunəs

(tex) taqʔənan šin

'on Monday he worked'

(it was Monday when he worked)

lunəs

(tex) tsiʔ šin

'on Monday he went'

(it was Monday when he went)

Some time indicators constitute a separate nexus in most constructions where they precede the verb:

niʔy (oore)

ox twaaʔn šin

'at what time will he eat?'

(what will the time be when he will eat?)

niʔy (oore) (ok) waaʔl šin

'at what time will he eat?'

niʔy (oore)

ox taax šin

'at what time will he go

back?' (what will the time be when he goes back?)

niʔy (oore) ox aaxəl {aaal}

šin

'at what time will he go

back?'

niʔy (oore)

(tex) sɬuul]suul[šin

'at what time did he arrive

here ('today')?' (what was the time when he arrived here (today)?)

ni'y (oore)
(tex) twaa'n sin

'at what time did he eat
(not today)?' (what was
the time when he ate?)

ni'y (oore) cin uul sin

'at what time does he
(usually) arrive here?'

ni'y (oore) cin waa'n sin

'at what time does he
(usually) eat?'

alkee q'iix
ox tawan sin

'what day will he sow?'
(what day will it be when
he will sow?)

alkee q'iix ok awaal sin

'what day will he sow?'

alkee sxaaw
ox tpon sin

'what month will he arrive
here?' (what month will it
be when he arrives here?)

alkee sxaaw (ok) pomel sin

'what month will he arrive
here?'

alkee sxaaw
(tex) tsi' mlaax

'what month did he go to
the coast?' (what month
was it when he went to
the coast?)

alkee q'iix
(tex) tkim sin

'what day did he die?'
(what day was it when he
died?)

alkee xnaap?q'ii
(tex) kuul qe paale

'what year did the priests
arrive here?' (what year
was it when the priests
arrived here?)

alkee xnaap?q'ii
(tex) si'uul qe paale

'what year did the priests
arrive here (they are still
here)?' (what year was it
when the priests arrived
here?)

alkee twi? q'iix
(tex) tɬʔx neeʔ

twi? qman ee
(tex) tɬim sin

alkee taxlaal sxaaw
ox tuul sin

alkee taxlaal sxaaw
(tex) tɬim sin

alkee q'iix ɬin uul sin

alkee q'iix ɬin ɕʔaxon
{ɕxon} sux

kaapʔe taxlaal maaye
ox tuul sin

kaapʔe taxlaal maaye
(tex) wawan is xnaapʔe

laaxəx taxlaal maaye ɬin
iʔy ninq'iix

'on what Calendar day was
the child born?' (what day
of the Calendar was it
when the child was born?)

'on the first Calendar day
he died' (it was on the
first Calendar day when
he died)

'on what date will he arrive
here?' (what will the date
be when he arrives here?)

'on what date did he die?'
(what was the date on
which he died?)

'on what day does he (usu-
ally) arrive here?'

'on what day does she
wash?'

'on May second he will ar-
rive here' (it will be May
second when he arrives
here)

'on May second I sowed pota-
toes last year' (it was on
May second that I sowed
potatoes last year)

'on May tenth the fiesta
takes place'

waaʔl	'to eat'	q'iix	'day'
sxaaw	'month'	mlaax	'coast'
aqʔənaal	'to work'	xnaapʔqʔii	'year'
awaal	'to sow'	iʔʔx	'be born'
alkee	'which?'	neeʔ	'baby, child'

taxlaal	'number, date'
c?axool {cxool}	'to wash clothes'
is	'potatoes'
niinq?iix	'fiesta'

At present I consider only the sentences in which the time indicators do not constitute separate nexus. The examples so far presented lead to a number of observations that I shall make now.

The adverbial ok 'future (assertion)' is obligatory only with the 'non-first singular' of verbs the sign expression of which begins with a central:

ok aaxel {aaal}	'he will go back there'
činaaxel {činaaal}	'I shall go back there'
ok činaaxel {činaaal}	'yes, I shall go back there'
čomool {čmool} sux	'she will weave'
ok čomool {čmool} sux	'yes, she will weave'

ok selects the tense 'future'.

The other time indicators that include the content unit 'non-past' appear in the examples in nexus in the 'non-future' tense, i.e. they select the 'non-future'.

As the examples presented above show, the time indicators that include the content unit 'past' select the tense 'non-future'.

The time indicators that are basically neutral as to the distinction 'non-past'-'past' appear in a varying number of constructions according to their content substance. gin 'simultaneity' selects the tense 'non-future' and it

combines with several other time indicators. The other "neutral" time indicators combine with e 'narrative, distant past' when specifically referring to a past action; they combine with the adverbial cin 'simultaneity' when their neutrality is intended; and when referring to a future action they may combine with ok 'future (assertion)' and with the tense 'future'.

The choice of tense after some of the neutral time indicators also depends upon the verb. Thus after a name of a day of the week, for example lunes 'Monday', a future action is indicated by 'non-future' if the verb is a directional verb, whereas with other verbs there is free variation between 'future' and 'non-future':

lunes cin lukul [lkul] is 'on Monday I shall go to dig up potatoes'

lunes cinplaseyiil 'on Monday I shall go shopping'
lunes cinplaseyin

In the many examples given above, all the time indicators in question appear before the verb. However, some of them can also occur following the verb, whereas others cannot. Some of the time indicators that always appear before the verb are:

ok	'future (assertion)'
xtox	'when (fut)?'
ma	'simple, recent past'
o	'simple, distant past'
s	'narrative, recent past'

e	'narrative, distant past'
xtooxe {xtooo}	'when (past)?'
tex	'when (past)'
qee	'recently'
qmaakʔəs	'very recently, just now'
niʔy (oorə)	'at what time?'
qin	'simultaneity'
ox	'when (fut), whenever'

The choice of tense may differ according to whether a time indicator precedes or follows the verb. Below are some sentences with time indicators following the verb:

ok aaxəl {aaal} <u>xnaapʔ</u>	'he will go back there <u>next year</u> '
(ok) tilaʔ {tlaʔ} <u>sin</u> <u>nčiʔx</u>	'he will see it <u>tomorrow</u> '
(ok) loqʔool {lqʔool} <u>sin</u> nux pʔoč <u>xnaapʔ</u>	'he will buy a pig <u>next</u>
il	'see'
loqʔool {lqʔool}	'to buy'
xun	'one, a'
pʔoč	'pig'
esiʔ <u>sin eewə</u>	'he went <u>yesterday</u> '
q-aqʔənan <u>sin eewə</u>	'he worked <u>yesterday</u> '
q-aax nčoxoʔn {nčxoʔn} nkʔaspʔen <u>eewə</u>	'I paid my debt <u>yester-</u> <u>day</u> '
esiʔ <u>sin kaapʔəxee</u>	'he went <u>the day before</u> <u>yesterday</u> '
enčiʔon miʔš <u>kaapʔəxee</u>	'I ate turkey <u>the day be-</u> <u>fore yesterday</u> '

enok si?]enoks[tu?yə
paale ooxəçə {ooocə}

'I entered (into service)
with the priest long ago'

aq?ənaal	'to work'
čoxool {-čxool}	'to pay'
k?asp?en	'debt'
či?ool	'to eat meat'
mi?š	'turkey hen'
tu?yə	'with him'
paale	'priest'

činše?l te qaale

'I shall go late'

šinxaw wa?ee]we?[xya?š

'I got up early (today)'

enxaaw wa?ee]we?[xya?š

'I got up early (not today)'

šəuul]suul[sin te ləs oče

'he came (today) at eight
o'clock'

činsnaq?əaal xake q?iix

'I shall study every day'

ø-uul xil kamyənətə xake
q?iix xnaap?ə

'the bus arrived here
every day last year'

čin činaq?ənan xake q?iix

'I work every day'

ok uuləl sin kaap?ə
taxlaal maaye

'he will arrive here on
May second'

činxoşool {-činxşool}
xun oore

'I shall hoe for one hour'

enxoşon {-enxşon} xun
oore eewə

'I was hoeing for one hour
yesterday'

čin činxoşon {-činxşon}
xun oore

'I (always) hoe for one
hour'

ok uuləl sin lunəs

'he will come on Monday'

ok awaal sin lunəs

'he will sow on Monday'

esi? sin lunəs

'he went Monday'

ø-awan sin lunəs

'he sowed Monday'

čín aax sin lunes

'he (always) returns from
here Monday'

xaaw waʔee]weʔ[	'get up'
ʃnaqʔʔaal	'to learn, study'
kamyeneta	'bus'
xoʃool {xʃool}	'to hoe'
awaal	'to sow'

When the sign expression for 'tomorrow' precedes the verb, the nexus is in the 'non-future'; and when the sign expression for 'tomorrow' follows the verb, the nexus is in the 'future':

<u>nčiʔ</u> činčomon {čínčmon}	' <u>tomorrow</u> I shall weave'
čínčomool {čínčmool} <u>nčiʔx</u>	'I shall weave <u>tomorrow</u> '
<u>nčiʔ</u> čis mlaax	' <u>tomorrow</u> I shall go to the coast'
čínʃeʔl mlaax <u>nčiʔx</u>	'I shall go to the coast tomorrow'

Looking at this from the point of view of direction, it can be said that 'tomorrow' has two variants: one with the sign expression nčiʔ that appears before the verb, and one with the sign expression nčiʔx that appears after the verb; likewise 'the day after tomorrow' has two variants: both have the sign expression kaapʔx, but one precedes the verb, and the other follows the verb. The variant for 'tomorrow' that is manifested by nčiʔ and the variant of 'the day after tomorrow' that is manifested before the verb select 'non-future', whereas the other two variants of these two time indicators--those manifested after the verb--se-

lect 'future'.

Nearly the same relationship is found between the tenses and the time indicators that are neutral as to the distinction 'non-past'-'past' when these refer to future actions:

lunes čis lukul {lkul} is 'Monday I shall go to dig up potatoes'

činse'l lukul {lkul} is 'I shall go to dig up potatoes on Monday'
lunes

The slight difference between those that include 'non-past' (here: 'tomorrow') and those that are neutral (here: 'Monday') in this respect is that there is always 'non-future' after the sign expression for 'tomorrow', whereas there is free variation between 'future' and 'non-future' after the sign expression for a "week day" when the verb is not a directional verb:

nčič čis mlaax

'tomorrow I go to the coast'

lunes činplaseyil }
lunes činplaseyin }

'on Monday I shall go shopping'

Of course the time indicators that include the content element 'past' never combine with the tense 'future', but only with 'non-future'. For these, the difference in construction between a sentence with the sign expression of a time indicator that precedes the verb and a sentence with one that follows the verb consists in the presence or ab-

sence of the adverbial e 'narrative, distant past':

<u>eewə</u> <u>ɬuul</u> <u>sin</u>	' <u>yesterday</u> he arrived here'
<u>ɬ</u> - <u>uul</u> <u>sin</u> <u>eewə</u>	'he arrived here <u>yesterday</u> '
<u>eewə</u> <u>ɕinpičqʷuuyən</u>	' <u>yesterday</u> I made somer-
<u>eewə</u> <u>enpičqʷuuyən</u>	saults'
<u>enpičqʷuuyən</u> <u>ew</u>	'I made somersaults <u>yes-</u>
	<u>terday</u> '

On the basis of substance, 'future' is clearly seen to be the intensive term in the opposition 'future' - 'non-future': its meaning is restricted and it is never used for 'non-future'.

'Non-future' on the other hand is broadly defined: it can even be said to be used for 'future', for example after time indicators that include the content element manifested as 'non-past'.

<u>nčiʔ</u> <u>ɕinawan</u>	'tomorrow I shall sow'
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Another fact that reflects the extensiveness of 'non-future' is that the manifestation of the syncretism of 'future' and 'non-future' which appears in certain dependent clauses, for example after the conjunction tex 'when (past)' and ox 'when (fut)', is identical with the manifestation of 'non-future':

<u>tex</u> <u>tuul-ɬ</u> <u>sin</u> ...	'when he came ...'
<u>ox</u> <u>tuul-ɬ</u> <u>sin</u> ...	'when he will come ...'
<u>ma</u> <u>ɬuul-ɬ</u> <u>sin</u>	'he came'

sin uul-ǵ sin

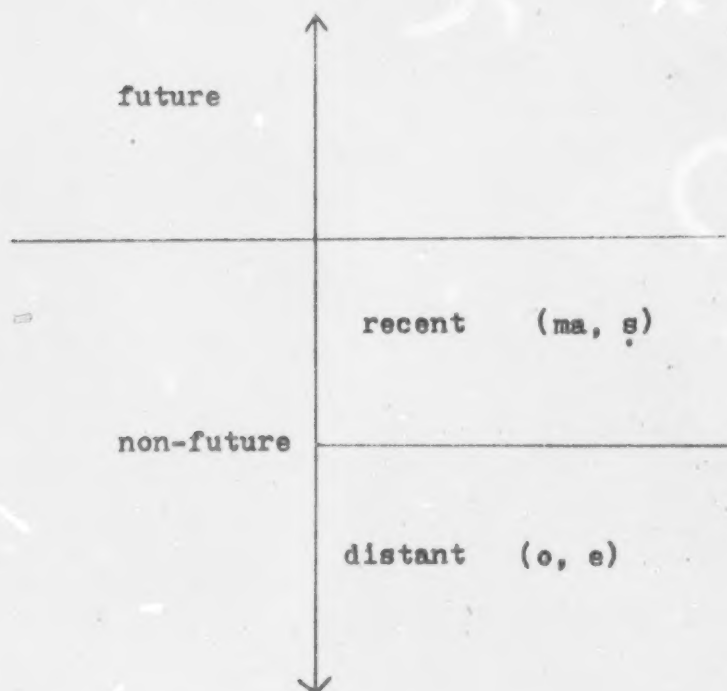
'he is coming'

ok uul-ǵ sin

'he will come'

The elements of tense are of course not the only elements whose manifestations are connected with time, and I shall here try to consider the general division and treatment of time disregarding the formal distinction between tenses and temporal adverbials or other time indicators.

The two tenses divide time into two periods, a future period and a non-future period. The non-future period is by certain temporal adverbials again divided into a recent and a distant past period.



future:

ćinawaal

'I shall sow'

non-future recent:

ma ćinawan

'I sowed (today)'

sćinawan]šinawan[

non-future distant:

o ćinawan

'I sowed (not today)'

enawan

The present time is not treated as a period on a par with these other periods. Present time is but one specific interpretation of what I have called 'simultaneity', which always relates to some context. Thus, a phrase like he is eating is related to a context introduced by lu 'here he is' or 'here he was':

lu ċin waa?na?

'here he is, he is eating'

lu qen ċin ćinwaa?na?

'here I am, I am eating'

The division of the non-future period and its concrete assignment to a recent or a distant past period appear to be dictated partially by the broad definition of the non-future.

A number of verbs dominate a syncretism of 'indicative - non-future' and 'imperative - future/non-future'. This syncretism is resolved as 'indicative - non-future' when the verb is preceded by a time indicator or by one of a certain type of adverbials,

ma ɬʔawan sin	'he sowed'
nčɪʔ ɬʔawan sin	'tomorrow he will sow'
eewə ɬʔawan sin	'yesterday he sowed'
nuq xaaw seʔypəxə	'you might get frightened'

or when it follows certain very short nexus:

wax činawan	'I want to sow'
ats ɬaax qloolx	'there is still (time) (till) dark comes'

But when nothing precedes the verb, the syncretism is resolved as 'imperative - future/non-future',

ɬʔawane	'sow!' (sg)
čɪʔawane	'sow!' (pl)
činawan	'let me sow'
quʔawan	'let's sow'

Time indicators others than ma, o, s, e, and ɬin may specify certain points within one of the three periods. In the clause

epon sin eewə	'he arrived there yesterday'
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the temporal adverbial expressed by e indicates that the action takes place in the distant past period of the non-future period, and 'yesterday', expressed by eewə, specifies one point within the distant past period. In

ɬpon sin xyaʔs	'he arrived there early'
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s indicates that the action takes place in the recent past period, that is during the present day, and xva?s narrows the time down to a point within this period, namely 'early' in the day.

Certain of the time indicators naturally refer to only one of the three periods, thus 'tomorrow' for example naturally specifies a point within the future period, and 'yesterday' naturally refers to a point within the distant past period. When one of these restricting time indicators precedes the verb, then no specification of the period accompanies the verb. In the two sentences

eewə ċinpon	'yesterday I arrived there'
nċi? ċinpon	'tomorrow I shall arrive there'

eewə and nċi? supply the information concerning both the period, distant past and future respectively, and the point within that period, yesterday and tomorrow respectively. But in the sentences

enpon eewə	'I arrived there yesterday'
ċinpoməl nċi?x	'I shall arrive there tomorrow'

the periods distant past and future are given by the time indicator e and by the tense 'future', and eewə and nċi?x specify only the point within the period. Here it is not possible to have eewə and nċi?x supply all the temporal information because the verb form would be interpreted as in-

cluding the element 'imperative' if the verb itself were not referred directly to one of the three periods.

In the present discussion I have listed both the temporal adverbials ma and s as indicating 'recent past' and both o and e as indicating 'distant past'. I have earlier described them more precisely as follows,

ma	'simple, recent past'
s	'narrative, recent past'
o	'simple, distant past'
e	'narrative, distant past'

The difference between 'simple' and 'narrative' is not a temporal distinction, but may be said to be of an aspectual nature. ma and o do not co-occur with other time indicators, whereas s and e are used in conjunction with any elaboration of the time and with elaboration of certain other sides of the action.

A number of other units the nature and uses of which I shall now sketch are superimposed on the system of time.

Among these modifying units are the several adverbials of negation:

xnaapʔə <u>min</u> enwkʔan qʔeʔn	'I did <u>not</u> drink liquor
<u>min</u> enwkʔan qʔeʔn xnaapʔə	(during) last year'
<u>min</u> činwkʔan qʔeʔn xnaapʔə	
<u>min</u> enawan lunəs	'I did <u>not</u> sow on Monday'
<u>min</u> sčinawan]šinawan[	'I was <u>not</u> sowing early
xyaʔs	(today)'
<u>min</u> o činawan	'I have <u>not</u> sown'

<u>min</u> ma činawan	'I have <u>not</u> sown (today)'
<u>min</u> čin činawan	'I am <u>not</u> sowing (now)'
<u>min</u> činwk'an q'e'n	'I do <u>not</u> drink liquor'
<u>min</u> činawan	'I do <u>not</u> sow'
<u>mi'n</u> činawan	'I shall not sow'
<u>mi'n</u> č'awane	'you will <u>not</u> sow'
	'do <u>not</u> sow!'
<u>mi'n</u> či' tk'a'ne a' sik	'do <u>not</u> drink the water
tu'n <u>mi'n</u> čaax yaap't tey	lest you get sick'
...tu'n <u>mi'n</u> č'ok si'	'so that water will <u>not</u>
]č'oks[a' tux	get in there'
<u>mi'n</u> mo činxoyon {-činxyon}	'you think I did not look
ti'x	for it?'
<u>mi'n</u> mo qukim	'you think we are not
	going to die?'
<u>mlay</u> činxaaw si']činxas[	'I <u>cannot</u> go up there'
<u>mlay</u> xaaw nyo'p'e'n	'I <u>cannot</u> hang it up'
<u>nunke</u> činpon	'I shall <u>never</u> arrive
	there'
<u>mina's</u>]mna's[tawan šin	'he has still <u>not</u> sowed'
<u>mina'n</u>]mna'n[tuul šin	'he has <u>not</u> arrived here
	yet'
lunes <u>min</u> aal kamyenete	'on Mondays the bus does
č'in uul	<u>not</u> arrive here'
tux lunes <u>min</u> aal šin čuul	'he will <u>not</u> arrive here
	on Monday'
tux lunes <u>min</u> aal šin epon	'he did <u>not</u> arrive there
	on Monday'
<u>min</u> aal xun exaaw knet	' <u>not</u> one (person) was
	caught'

<u>min</u> ti ² tl tu ² n tuule	'you will <u>not</u> arrive here again'
nya ² n q ² inen <u>nya²n</u> q ² inen	'(he is) <u>not</u> rich'
<u>nya²n</u> peeyre qenwe	'I am <u>not</u> Pedro'
<u>nya²n</u> <u>min</u> činč ² axon {činxon}	'I do <u>not</u> wash'

wk ² aal	'to drink'	mo	'or'
q ² e ² n	'liquor'	kim	'die'
awaal	'to sow'	yo ² p ² əl	'to hang' (tr)
xya ² s	'early'	kamyenete	'bus'
a ²	'water'	knet	'was found'
(sik) tu ² n	'so that'	q ² inen	'rich'
yaap ² t	'be sick'	qenwe	'I am'
tux	'in it'	č ² axool {cxool}	'to wash'
xoyool {xyool}	'to look for'		

min is the sign expression for an actual negation used in negating the action of the verb. It combines with the temporal adverbials ma, s, o, e, and gin and it occurs without any temporal adverbial to express a habitual absence of some action either in general or within a given period,

min činwk ² an q ² e ² n	'I do not drink liquor'
min činwk ² an q ² e ² n xnaap ² ə	'I did not drink liquor last year'

mi²n is sign expression for a hypothetical negation used about actions that have not yet taken place and about actions that may or may not take or have taken place.

Neither the actual nor the hypothetical negation combines with the tense element 'future',

min činawan

'I do not sow (as a rule)'

miʔn činawan

'I shall not sow'

The verbs in the examples have either the incomplete form or they occur in a construction with a directional verb; the complete verb forms do not combine with any negations.

Completive:

o nxoy

'I looked for it'

enxoy eewe

'I looked for it yesterday'

but:

min o činxoyon {činxyon}

'I did not look for it'

min enxoyon {enxyon} eewe

'I did not look for it
yesterday'

In dependent clauses introduced by the conjunction tuʔn 'so that' personal formants of set I are generally used, but when the verb in such a clause is negated, then personal formants of set II appear just as in independent clauses,

tuʔn tok siʔ]toks[aʔ tux

'so that water will get
in there'

tuʔn miʔn ʔʔok siʔ]ʔʔoks[
aʔ tux

'so that water will not
get in there'

o ʔʔok siʔ]ʔʔoks[aʔ tux

'water got in there'

mlay is the sign expression for a negation 'cannot' and it does not combine with the temporal adverbials ma, q, o, e, or ɕin, and it commonly refers to future actions.

The negat'ons mina?s]mna?s['still not', mina?n]mna?n['not yet', min aal 'nobody', and min ti? are composite (aal and ti? are interrogative units, 'who' and 'what'), and they function as separate nexus. Thus, for example, mina?s]mna?s[tawan can be translated as 'there is still not (the point in time) that he sows', or tux lunəs min aal sin epon as 'on Monday there was not some one, he arrived'.

nya?n is the variant of min that is used in connection with nouns and adjectives. It appears to be a variant of min also in the few examples where it occurs with a verb.

The three periods into which Mam divides time relate to the present moment, thus the future period is the period of time that follows the present moment. However, an element expressed by tq makes it possible to have any given point in time function as the present moment. It appears in one of two closely connected nexus, and the time of the action in the one that includes tq relates to the time of the other nexus as though the latter represented the present moment.

o-tq ɕi?y xp?aal tex
šinaax ɕaax]šinaxɕ[

'the rain had passed when
I returned here'

ma-tq tkimlen tex npon

'he had just died when I
arrived there'

maa-tq ɕin kim sin tex
npon

'he was dying when I
arrived there'

č'i-tq tkim sin tex wuul

'he was almost dead when I
arrived here (I saved him)'

q̣ee-tq ḳimnin ṣin tex
wuul

'he had died shortly before
I arrived here'

q̣ee-tq wuullen tex ṭkim
ṣin

'I had arrived here short-
ly (before the time) when
he died'

eewə-tq ṭkimlen ṣin tex
npon

'he had died the day (before
the time) when I arrived
here'

kaapʔəxee-tq ṇsiʔlen tex
tuul ninqʔiix

'I went away two days before
the fiesta'

ṇciʔ-tq tuulleel ṣin tex
ṇsiʔ

'he arrived here the day
after I went away'

mi-tq-ṣ q̣in c̣inponaʔ tex
teel ʔaax]teʔ[xpʔaal

'in spite of efforts I had
not arrived there when the
rain came'

mi-tq-naʔṣ ṭəaax las seys
tex wuul

'it was not yet six o'clock
when I arrived here (not
today)'

mi-tq-naʔṣ ṭəaax las seys
tex šinuul

'it was not yet six o'clock
when I arrived here (today)'

nuqet uul ṣin tex minnaʔ-tq
ṭkim ṣin

'if only he had come when
his father had not yet died'

iʔyəl	'to pass'
xpʔaal	'rain'
ḳim	'die'
c̣ʔin	'a little, almost'
q̣ee	'recently'
ninqʔiix	'fiesta'
las seys	'six o'clock'
nuqet	'if only'

In these sentences the choice of verb form and tense depends upon the combinations of an adverbial and tq. The

examples show that tq co-occurs with several different verb forms and with both 'future' and 'non-future'; and in combination with tq several of the adverbials co-occur with a verb form or a tense with which they would not otherwise combine, for example,

ma kím sìn	'he died'
ma-tq tkimlen sìn ...	'he had died ...'
nčì? ɕuul sìn	'tomorrow he will come'
nčì?-tq tuulleel sìn tex nɕì?	'counting from the day I went away he will arrive here the day after'

There are two units that seem to focus the attention on either the time up until some given point or from a certain point in time and until the present. The sign expression for 'until' or 'not until' is sə and the sign expression for 'since' is ɕə:

nčì?x-sə kupʔeel sɪ?	'he is not going to be buried till tomorrow' (until tomorrow he will be buried)
]kuʔeɫəs[muqet]mɕet[sìn	
qaale-sə činwaaʔl	'I shall not eat till this afternoon' (until the afternoon I shall eat)
xnaapʔ-sə činuulel	'I shall not come back here till next year' (until next year I shall arrive here)
tee-sə xpʔaalel činawaal is	'I shall not sow potatoes till the rainy season'

tux-se xuntl sxaaw ċin-
pomel

ox-se tpon xun sxaaw
p'isēn ok uulēl sīn

tex-se waax p'is uul sīn
ke'yēl txaa sīn

tex-se spon sīn p'is
sp'int taaq'un sīn

eew-ce ċinwaa'n

ooṣexee-ce aaxnin sīn

xnaap'e-ce]xnaap'ce[
kimnin sīn

xaa-ce tsi' sīn xnaap'e

xaa-ce tkim sīn kaap'e
taxlaal maaye

(until the rainy season
I shall sow potatoes)

'it will be another month
before I arrive there'
(until in one more month
I shall arrive there)

'he will not come back for
another month' (until
when one month will ar-
rive he will arrive here)

'not until I had gone did
he come to see his house'
(until when I went away
and he arrived here to
see his house)

'not until he came did the
work get done' (until when
he arrived there (today)
and his work got done)

'I have not eaten since
yesterday' (it is since
yesterday I eat)

'he left three days ago'
(since three days ago
he is gone)

'he died last year'
(since last year he is
dead)

'he went away last year'
(it is since last year
that he went away)

'he died on May second'
(it is since May second
that he is dead)

xaa-çə tkupʔlen kím sin
tux mlaax xnaapʔə

'he died at the coast last
year' (it is since last
year that he died at the
coast)

xaa-çə xnaapʔə tokien
çuyeet {çyet} taaqʔun sin

'last year he began his
work' (since last year he
began his work--he has
not finished it yet)

muquul {mquul} 'to bury'
qaale 'afternoon'
waaʔl 'to eat'
xpʔaaləl 'rainy season'
xun-tl 'one more'
sxaaw 'month'
kəʔyəl 'to see'
txaa sin 'his house'
pʔint 'is done'

taaʔun sin 'his work'
kím 'die'
xaa 'that, it'
kaapʔə 'two'
taxlaal 'date, number'
maaye 'May'
mlaax 'coast'
tux 'in it'
çuyuul {çyuul} 'to grab,
begin'

It is of interest here that the presence of sə or çə in certain instances requires a tense or a verb form different from those that would be expected if no sə or çə were present,

nčiʔ činawan
nčiʔx-sə činawaal

'tomorrow I shall sow'
'I shall not sow till
tomorrow'

xnaapʔə kím sin
xnaapʔə-çə]xnaapʔçə[
kimnin sin

'he died last year'
'he has been dead since
last year'

The unit that I call 'not until' occurs in some connections where this translation of it is inappropriate,

at-sə qʔiix tsiʔlen sin	'he has been gone for days'
xteʔ-sə qʔiix tsiʔlen sin	'for how many days has he been gone?'
ma pʔint-sə xun xnaapʔqʔii taaxlen sux	'it has been a year since she went back'

at	'there is'
qʔiix	'day'
xteʔ	'how much, many?'

Until I have the possibility of studying this in greater detail I cannot arrive at an interpretation of sə that is appropriate for all its occurrences.

This informal presentation of certain uses and relationships of the elements of tense was intended as nothing but a very general outline. The exact questions to be answered in this operation are:

Does 'future' contract direction in all the maximal lexias into which it enters?

Does 'non-future' contract direction in all the maximal lexias into which it enters?'

The tentative answer is "yes" to both questions. 'Future' contracts direction with certain temporal adverbials in most of its occurrences, and in a sentence like

činxoşool {činxşool}	neex	'I shall hoe first and then I shall sow'
pʔisen činawaal		

xoşool {xşool}	'to hoe'
neex	'at first'
pʔisen	'and then'
awaal	'to sow'

the second occurrence of 'future', in ċinawaal, is directed by the first occurrence of 'future', in ċinxoṣool {ċinxṣool}, and thus both these occurrences of the element 'future' are seen to contract direction. It appears that 'future' in fact contracts direction in all the maximal lexias into which it enters.

The same seems to be true for 'non-future', a fact which is supported by the resolution of the syncretism of 'indicative - non-future' and 'imperative - future/non-future' as 'imperative - future/non-future' when not preceded by an adverbial or by some other unit that directs 'non-future', cf. p. 264.

According to this tentative analysis, the category of /tense/ is registered in { β_2 }, the category of directives, on the basis of both of its elements.

/Mood/ There is an adverbial that appears in connection with 'imperative' when it combines with certain verbs of motion,

<u>ku</u> ċiy ċʔaxool {ċxool}	'go to wash!' (sg)
<u>ku</u> ċi tey txaay	'go home!' (sg)
ċʔaxool {ċxool}	'to wash'
txaay	'your (sg) house'

There is direction between ku and 'imperative' in these examples. However, 'imperative' does not contract direction in all the maximal lexias into which it enters.

'Indicative' contracts direction with a number of the

temporal adverbials, for example ma 'simple, recent past', s 'narrative, recent past', o 'simple, distant past', e 'narrative, distant past', cin 'simultaneity', and ok 'future (assertion)', but not with, for example, nāiʔx 'tomorrow'.

Thus the category /mood/ is registered in $\{i\tau_2\}$, category of thematives, according to both 'imperative' and 'indicative'.

te te does not contract direction in any of the maximal lexias into which it enters; and it is therefore registered in $\{iB_2\}$, category of constitutives.

/Article/ No element of the category /article/ has been found to contract direction in any of the maximal lexias into which they enter, and it is registered in the category of constitutives, $\{iB_2\}$.

/Case/ The solidarity contracted by 'subject case' and 'object case' is recognized as direction, and both elements must thus be said to contract direction in all the maximal lexias into which they enter, and the category is registered in $\{i\beta_2\}$, category of directives.

/Interlocutor/ No element of the category /interlocutor/ contracts direction. In other words, the relation that may exist between an element of /interlocutor/, expressed by a verbal prefix, and a pronoun, concord, is a combination and

not a selection or a solidarity:

na'yen sčinxoyon]šinxyon[ti'x sin	'I was looking for him'
xaa sin sčinxoyon]šinxyon[ti'x sin	'I was looking for <u>him</u> '
ok si']oks[nčoxo'n -[nčoxo'n] tpasaaxey	'I paid your fare'
na'yen ok si']oks[čoxon -[čoxon] te tpasaaxey	'I paid your fare'
činkup'eel {činkp'eel} tp'iyo'ne]tpy'o'ne[	'you will kill me'
kup'eel {kp'eel} tp'iyo'ne]tpy'o'ne[na'yen	'you will kill <u>me</u> '

na'yen	'I, me'
xoyool {xyool}	'to look for'
xaa	'that, it, he'
čoxool {čxool}	'to pay'
pasaaxe	'fare'
p'iyoool]py'ool[	'to kill, hit'

Thus the category /interlocutor/ is registered in {iB₂}, category of constitutives.

/Exclusion/ Neither one of the two members of the category /exclusion/ contracts direction in any of the maximal lexias into which they enter, and the category is therefore registered in {iB₂}, category of constitutives.

The elements of the categories /centrals/, /marginals/, and /centro-marginals/ do not contract direction, and all

three categories are registered in $\{iB_2\}$, category of constitutives.

/Radicals/ Some radical units contract direction in all maximal lexias into which they enter. Among these are ma 'simple, recent past' and o 'simple, distant past', which both contract direction with 'non-future'.

Other radical units contract direction in some, but not in all, maximal lexias into which they enter; eewe 'yesterday' is an example,

eewe ċinpon

'yesterday I arrived there'

enpon eeve

'I arrived there yesterday'

In the first sentence eeve directs 'non-future', but in the second 'non-future' is directed by a 'narrative, distant past'.

Radical units of a third class never contract direction; they are, for example, verbal and nominal radicals.

Thus, before mapping is applied, the category of /radicals/ is registered in $\{iB_2\}$, $\{iB_2\}$, and $\{i\Gamma_2\}$; and according to Rés Rg 58 b): "If pre-elements entering into $\{i\Gamma_2\}$ have substitution to pre-elements entering into $\{iB_2\}$ and/or into $\{iB_2\}$, they are assigned to $\{i\Gamma_2\}$." the final registration of /radicals/ is in $\{i\Gamma_2\}$, category of thematives.

/Derivatives/ The derivatives 'ago' and 'in' contract direction in some maximal lexias,

esi? sin kaap?axee

'he went the day before
yesterday'

ċinawaal kaap?x

'I shall sow the day after
tomorrow'

'Ago' (xee) directs 'non-future' and 'in' (x) directs 'future'.

None of the other members of the category /derivatives/ contracts direction.

According to 'ago' and 'in', the category is registered in $\{i\Gamma_2\}$, and according to the other elements it is registered in $\{iB_2\}$. The final registration performed through mapping in agreement with Rés Rg 58 b) places the /derivatives/ in the category of thematives, $\{i\Gamma_2\}$.

Species - Simple Species The distribution of the taxeme categories based on direction has resulted in the following three realized categories:

$\{iB_2\}$, directives (*D): /modulations/
 /tense/
 /case/

$\{iB_2\}$, constitutives (*M): te
 /article/
 /interlocutor/
 /centrals/
 /marginals/
 /centro-marginals/

stitutives are transferred to the category of simple constitutives, but the thematives are divided: some are registered as simple flexives and others as simple constitutives.

<u>species:</u>	directives	thematives	constitutives
	(<u>*D</u>)	(<u>*P_t</u>)	(<u>*M</u> ')
	modulations	voice	<u>te</u>
	tense	mood	article
	case	radicals	interlocutor
		derivatives	centrals
			marginals
			centro-marginals

<u>simple species:</u>	simple flexives	simple constitutives
	(<u>*P</u>)	(<u>*M</u>)

Hjelmslev says about the redistribution in *gII:
 "This redistribution must not, however, cancel the results of the previous deduction and must, therefore, be so conducted that the taxeme categories as such are kept intact, so it is the taxeme categories as such and not the single taxemes that are redistributed." (Résumé Rg 123) In Rg 142, however, he says "The taxeme categories are consequently analyzed ... with attention paid, in the case of each taxeme, to all the maximal established units into which it enters."

The taxeme categories will be kept intact through mapping even though the individual taxemes are registered

in different categories.

In redistributing the thematives it appears that the taxeme categories are not kept intact; however, the redistribution is of varieties of the thematives. It is not clear precisely what the implications of this fact are.

The element 'active' of the category /voice/ is registered as a simple flexive, whereas the elements 'passive 1' and 'passive 2' are transferred to the category of simple constitutives.

The two elements of the category /mood/ have both a direction variety and a thematized variety, and these varieties therefore appear both among the simple flexives and among the simple constitutives, respectively.

Some /radicals/, for example ma 'simple, recent past', s 'narrative, recent past', o 'simple, distant past', e 'narrative, distant past', and gin 'simultaneity', appear only in the category of simple flexives. Elements like eewa 'yesterday' and nči?x 'tomorrow' have two varieties, a thematized and a direction variety, and these varieties these varieties therefore appear in both categories. Verbal and nominal radicals, for example č?it 'bird' and il 'see', are registered only in the category of simple constitutives.

The two derivatives xee 'ago' and x 'in' have varieties appearing both as simple flexives and as simple constitutives, but the rest of the derivatives are registered only in the category of simple constitutives.

The category of simple constitutives thus has the following members:

te

article

interlocutor

centrals

marginals

centro-marginals

'passive 1', 'passive 2'

'imperative', 'indicative'

sgs, etc., 8-11, etc.

derivatives

The category of simple flexives has the following members:

modulations

tense

case

'active'

'imperative', 'indicative'

na, etc.

xx, z

*III.2

Subspecies - Simple Subspecies The simple flexives are now subjected to a further analysis with the purpose of determining their role as constants or variables in the direction they contract. The constant in a direction is called the directed functive and the variable in a direction is the directing functive.

The simple flexives are in the present operation distributed over the following four categories: (RéS Rg 145)

"The $\{*_P\}$ [simple flexives] that include one or more elements which, when contracting direction, always contract it as directed, whatever maximal lexia they enter into, are registered in $\{iB_2\}$.

The $\{*_P\}$ that include one or more elements which, when contracting direction, always contract it as directing, whatever maximal lexia they enter into, are registered in $\{iB_2\}$.

The $\{*_P\}$ that include one or more elements which, when contracting direction, always contract it as directed by one relate and as directing another relate, whatever maximal lexia they enter into, are registered in $\{i\gamma_2\}$.

The $\{*_P\}$ that include one or more elements which, when contracting direction, always contract it as directed when they enter into certain maximal lexias and always contract it as directing when they enter into certain other maximal lexias are registered in $\{i\Gamma_2\}$."

According to RéS Dff 233, 234, 235, and 236 the mem-

bers of $\{:\beta_2\}$ are called fundamentals, those of $\{:\beta_2\}$ converted taxemes, those of $\{:\gamma_2\}$ semifundamentals, and those of $\{:\Gamma_2\}$ ambifundamentals.

The two elements in the category /modulations/ are registered in $\{:\beta_2\}$ and $\{:\beta_2\}$ respectively, and through mapping they are transferred to $\{:\gamma_2\}$, "If pre-elements entering into $\{:\beta_2\}$ have substitution to pre-elements entering into $\{:\beta_2\}$, both are assigned to $\{:\gamma_2\}$." (Ré s Rg 57 b)

'Active' is registered in $\{:\beta_2\}$.

Both 'future' and 'non-future' are registered in $\{:\beta_2\}$.

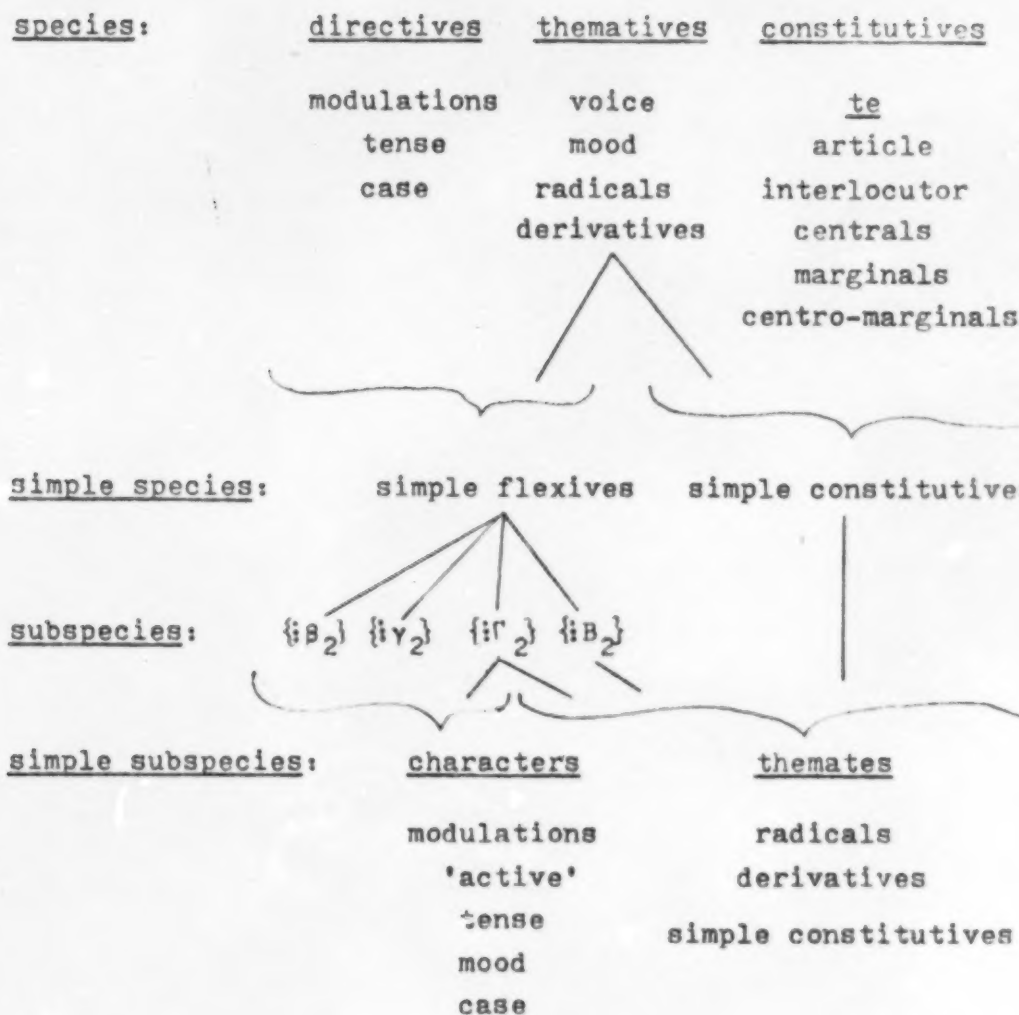
'Imperative' and 'indicative' are registered in $\{:\beta_2\}$.

Both elements of /case/ are registered in $\{:\beta_2\}$.

The /radicals/ and the /derivatives/ are registered in $\{:\beta_2\}$.

The four categories that result from this analysis are called subspecies, and they are in turn divided into two classes of simple subspecies: characters and themates. The fundamentals, semifundamentals, and fundamental and semi-fundamental varieties are registered as characters. Converted taxemes and converted varieties are themates. The simple constitutives are transferred unanalyzed to the category of themates. (The fundamental, semifundamental, and converted varieties are all varieties of ambifundamental taxemes.)

The analysis performed in gIII can now be outlined in the following way:



The procedure followed in operations *gII2 and *gII3 is identical with that of operation *gII1, but in each operation with a different function as basis of distribution.

In *gII1 the basis of distribution was the establishing relation within the maximal lexia, namely direction.

In *gII2 the function chosen is the establishing relation within a syntagmatic homosubgeneous sum. A homosubgeneous sum is defined as "a Sum into which Enter Taxemes of one and only one Simple Subspecies under one and the same

Simple Species." (Rés Df 237)

In *gII3 the function chosen as basis of distribution is the establishing relation within a syntagmatic homogeneous sum. A homogeneous sum is defined as "a Sum into which Enter Taxemes of one and only one Simple Species in one and the same Plane." (Rés Df 227)

*gIII and *gIV

After *gII follow two subseries of the operation series called taxematics, namely *gIII and *gIV, in which the taxemes are analyzed and defined further. However, I shall not complete subseries *gII nor even outline subseries *gIII and *gIV, first because these operations are extremely complicated involving a great many new terms and secondly because only an exhaustive execution of this part of the analysis will represent an actual addition to the present description of Mam.

APPENDIX

The letters that symbolize the expression taxemes have been chosen to assure close correspondence with manifestation and in agreement with general American practice in phonetic transcription, and the following comments are intended only as a preciser definition of a few of these symbols.

e and o are mid to lower-mid.

p, t, k, and q symbolize voiceless unaspirated stops.

k is palatalized.

qʔ is imploded.

pʔ is voiced and imploded in syllable initial position and voiceless and lenis in syllable final position.

x is a voiceless velar spirant.

s, ʃ, ʒ, and ʂ are symbols for four sibilants with the following points of articulation: dental (s), alveolar (ʃ), palatal (ʒ), and retroflex (ʂ). ɬ, ɮ, ɮ̥, and ɮ̥ʔ are symbols for the four corresponding affricates.

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